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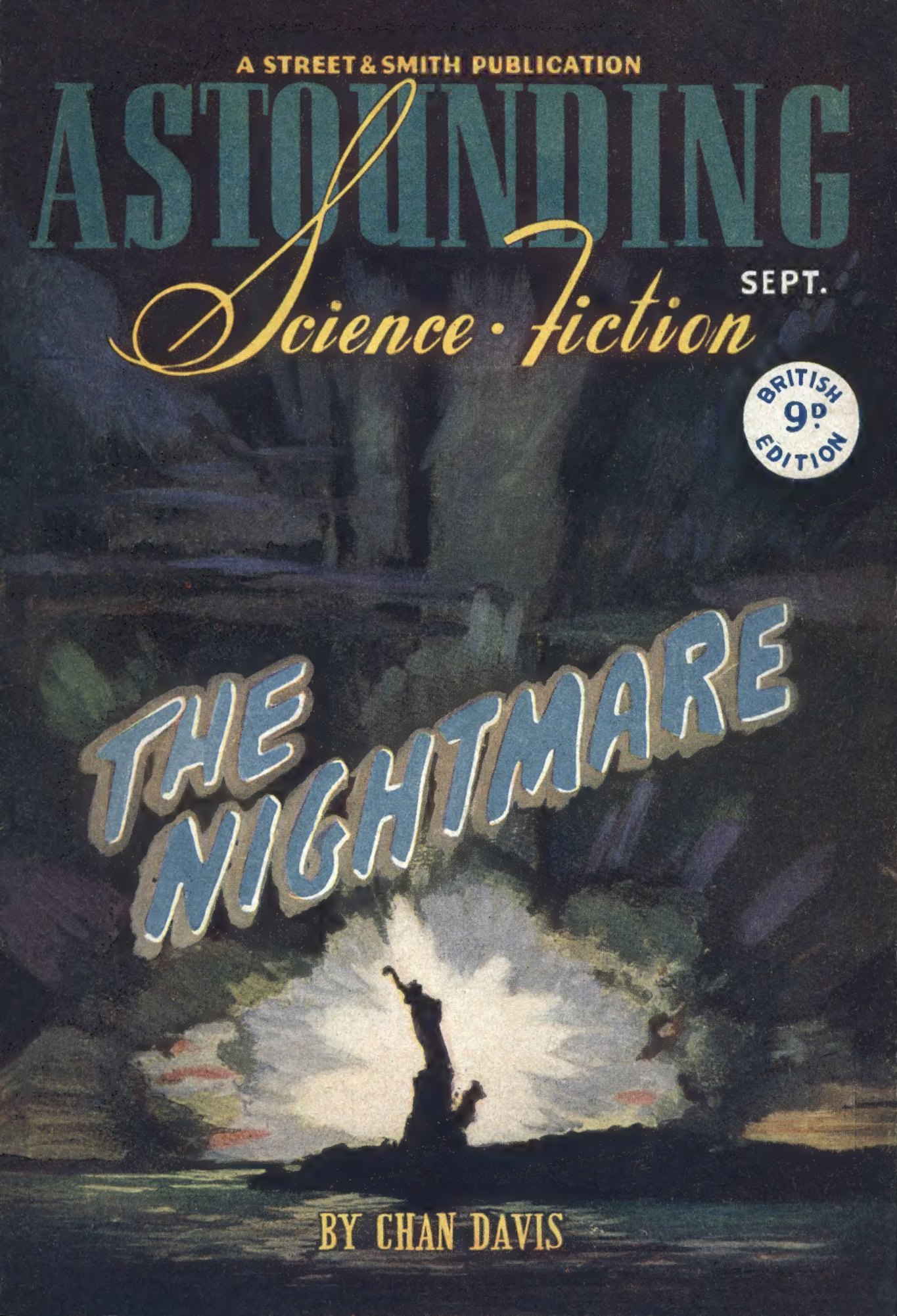
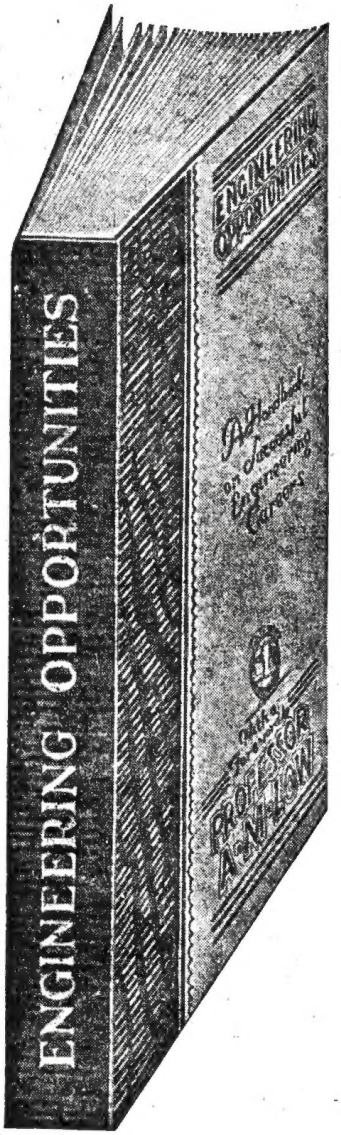


THE NIGHTMARE

BY CHAN DAVIS

AMBITIOUS ENGINEERS



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All stories in this magazine are fiction. No actual persons are designated either by name or character. Any similarity is coincidental.

The Nightmare

By CHAN DAVIS

This is a story of the immediate tomorrow — and of civilization headed down the inescapable road to destruction—down the road that we have, already, selected—and its nightmare end.

ROB CICCONE bent down, picked up the bottle of milk outside the door of his apartment, and started to pick up the paper beside it. When he saw the headline that topped two columns on the left-hand side of the front page, he hesitated. Then he stood up and wiped his forehead.

The morning newspaper is essentially a simple, ordinary, and familiar thing. It's a habit. But it doesn't seem quite so ordinary and familiar when you see your name in black type at the top of page one.

Rob picked up the paper and went back into the flat to read it. With forced deliberation, he slowly sat down in the most relaxing chair available and spread the paper carefully before starting the article. He was worried. As far as he knew there was no reason for him to be on page one. He did not belong there. He had, to be sure, been one of the speakers at the S.N.P. chapter meeting last night, but he had been planning to look for that write-up on page twenty-six or thereabouts. Worse, Rob's job was one of those in which you do not make page one in the

New York *Dispatch*, or any other paper, unless it is bad news, and very bad.

He began to read, then the worry gave way to puzzlement. It was the report of the meeting after all, and carried, as he had expected, the by-line of his friend Creighton Macomb. It ran:

CICCONE FLAYS CITY'S GEIGER SEARCH POLICY; WARNS PERIL GROWS

Dr. Robert A. Ciccone, chief of the Bronx Sector Radioactive Search Commission, stated last night that the present system of Geiger-counter search would not be adequate for the prevention of an A-bomb being planted in the New York area. Addressing the Bronx Chapter of the Society of Nuclear Physicists, he said: "No number of successes in preventing the importing of dangerous radioactives can compensate for just one failure, and I feel unable to state positively that failure, and disastrous failure, is impossible."

So far so good, thought Bob. At least they were quoting directly. Of course the sentence quoted was the most outspoken of the whole thing; it read like a much stronger attack on the search program than he had actually dared to make.

But the same thing had been said before by others. Ten years before, when the Geiger search had first been brought up as a counter-proposal to the Compton plan of decentralization, the whole subject had been batted back and forth in the press. Opponents of the search system, himself included, had claimed that New York was a sitting target for an atomic bomb, that no preventive measures could change that fact, and that the only answer to the danger was to scatter New York's industries and commerce over as wide an area as possible. The other party had pooh-poohed this warning, pointing to the U.N.O. Security Council's strict supervision of all the world's piles, and to the greatly improved methods for the detection of radioactives. Finally, the second party had won. And since that time even the most extreme alarmists had been given less and less newspaper space. He had thought his speech would be played down, interpreted as a suggestion that search methods be improved. Instead—this. Why?

He read the remainder of the article hurriedly. It was O.K. Accurately reported, without editorializing. But it didn't answer his question.

He thought of calling Crate Macomb, but looked at his watch and decided he'd have to wait. All through dressing, shaving, and breakfast, he was too preoccupied either to finish the paper or to give any thought to the rather suspicious results of some of the recent searches. Which in itself was unusual, for normally results that were not thoroughly innocuous were enough to take his mind off anything else.

At 8:15, when he was ready to leave for work, he dialed the *Dispatch*, gave an extension number.

"Could I speak to Macomb? That you, Crate?"

"Yeah. Hello, Rob." Macomb sounded ill at ease.

"I . . . er . . . I just called up to congratulate you on making the front page. Congratulate myself, too, of course."

"Congratulate—?" He sounded puzzled.

"That terrific billing I got in the paper this morning. I've got to admit I don't understand it. New editorial policy?"

"Oh, I get it. You've only seen the home edition, not the later editions."

"That's right. What have the later editions got?"

"Well, I'll tell you the whole thing." He dropped his voice. "The City Ed and I have been against this Geiger system right along, and looking for chances to slip through stories slanted against it."

"I thought you gave that up."

"I gave up bucking editorial policy openly, because it wasn't healthy, but I thought I'd take a chance on this story. The City Ed got it past His Nibs without too much trouble, it made the first edition O.K., and we thought the thing would come off But—"

"Yeah, but. I knew that was coming. What about those later editions?"

"That's the catch, all right. You remember what you told me last night before the meeting? About the aerial radioactivity your boys found over the Bronx yesterday?"

"You didn't let that into print, did you?"

"*I* didn't, no. I know well enough that radioactivity in the air might be either chance air currents from the Oswego pile, or hidden radioactives around the city, and whichever it is I know darn well that telling the people about it right away is the worst thing to do. Even if I had submitted copy on it, I wouldn't have expected it to get past the editor. But some cub reporter got the dope from the man who took the aerial tests, and didn't know any better than to submit it."

"And they ran it."

"And they ran it, yes." Crate paused, and said slowly: "They ran it in the same article with a rewritten version of what you read in the first edition."

"I can imagine. . . . His Nibs couldn't recall the edition that featured my statement, so he set out to discredit me."

"That's it. It could be much worse." Crate's tone of voice indicated what he meant. He meant, "Probably it *will* be much worse."

Rob stopped to let the implications sink in. Finally, "Has the news started a panic in the Bronx? The news of the tests, I mean."

"Not yet. Look, Rob. His Nibs doesn't know I was responsible for the slant in the original effense this morning; he's blaming it on the City Ed. He doesn't know I know you personally, either. He does know I graduated in nuclear physics. So he's assigning me to— write a feature on you. Not a build-up."

"*Whew*— So?"

"So I'll have to do the best I can. So I'd appreciate it if I could see you some time soon and talk the whole thing over. I can tell you more then."

That certainly seemed to be in order, to put it mildly. Rob named a cafeteria near the *Dispatch* Building, promised to be right down, and rang off.

On his way to the subway station he picked up a *Dispatch*. He was still on the front page, and, as Crate had indicated, the treatment of him was rather different. He had not merely addressed the Society of Nuclear Physicists; in this edition he had done much more. He had failed his trust as Sector Search Commissioner. The high aerial radioactivity indicated that an A-bomb was being assembled somewhere in his sector, although his search groups had failed to detect the importing of the bomb materials. It was hinted that the reason he had stressed, in his speech, the impossibility of adequate searches, was to cover up his own incompetence when news of his failure broke.

The slur, he reflected, would probably not hurt him much. His job was not political, and if he were incompetent no amount of fast talking would help him. Conversely, the press couldn't hurt him, outside of discrediting his statement. Still, you had to be careful not to underestimate the power of the press.

The other angle was much more important. Suppose the paper's first charge were right. Suppose that yesterday's test results had been more than chance, and that for some reason, maybe for the purpose of building a bomb, radioactives really had been smuggled into his sector. He wouldn't try to guess who might be doing it; he didn't know politics. But the thing was possible. Well?

Before meeting Crate, he slipped into a phone booth and held a conversation—consisting chiefly of code phrases—with the Bronx Sector headquarters. When it was done he hurried into the cafeteria and spotted Macomb. He asked abruptly: "Your car in town today?"

"Yes, it is."

"The usual parking lot?"

"Yeah."

"Good. We'd better go uptown right away." Macomb came without question.

"I just phoned Charlie. They're still getting the same results, a little bit stronger, and consistent. The wind's changed to east, and the meteorologist says if the readings keep coming this way another hour there's no chance that it's a false alarm. They really should have got in touch with me earlier, but as it is I'll have to get there as quickly as I can."

"This takes precedence over everything else, all right."

"It takes precedence over just about anything in the whole city, if it's not a false alarm. Anyhow," he added as they climbed into the car, "You're not skipping out on your assignment. If you're going to succeed in getting a story on my incompetence, here's your chance, and I certainly hope I disappoint you."

They cut west toward Riverside Drive, Macomb at the wheel. When they were on the Drive, Ciccone asked suddenly, "Who runs the *Dispatch*, anyway?"

"The Ed does a pretty fair job."

"Yes, but . . . you told me once the Ed takes orders from somebody."

The other laughed. "Things aren't as simple as that in the newspaper racket. Nobody gives orders. But if any one man determines the policies of the paper, I guess it's Ellsworth Bates."

Ellsworth Bates. Ciccone ran over in his mind what he knew of the man. Bates was not, to the public, a prominent name. On the society page it was inconspicuous. In political news the name seldom appeared. Even in business news it ordinarily occurred only in listings of corporation boards. Yet apparently behind the scenes this Bates was a power; Macomb certainly should know.

"I was thinking," Rob went on. "Suppose for a minute a bomb is being assembled, and suppose Bates is connected with it. Wouldn't that explain what happened this morning?"

"Why—"

"First, he may succeed in confusing our sector organization by slinging mud at me. Second, he may confuse the whole borough by starting a panic. Third, he would surely jump on anything that might talk the public into decentralization; he'd want the city to remain a good, highly localized target. The decentralization issue was what started all this, remember."

"Hm-m-m. Sounds plausible at first, but —forget it. Not a chance of it. Nobody with Bates' financial interests in the city is going to try to destroy it, and that rules out not only Bates but anyone else with the power to high-pressure into print a slam against you. Besides—this bomb scare might start a panic among the populace, but on the other hand it puts the squeeze on the Search Commission, making sure they'll act as quickly and as efficiently as they can. No, forget it."

"Still, for whatever reason, Bates is probably back of His Nibs' policy."

"It'd be a good guess, all right."

"And why," Rob said, half to himself, "does he go to such lengths to slap down anybody who speaks out for decentralization?"

They sped north along the Drive. Ahead of them was the Highway Search Station, where extrasensitive detectors would scan them, and in case they revealed radioactivity, would operate relays, causing the car to be photographed and an alarm bell to be rung. Ciccone had been caught more than once; the detectors were so sensitive that small amounts of natural uranium adhering to his clothes and shoes after lab work could sometimes actuate them. This time they got past without the Search Commission's police giving chase.

They were now in the Bronx Sector. "Where to?" asked Crate.

"Just a minute. If you'll get off the Drive and stop at the next drugstore, I'll give Charlie another ring."

"Use my radiophone if you want."

"We avoid 'em. Easier to intercept them than it is to tap ordinary phone wires."

"O.K." Macomb acceded to Rob's request.

Another coded phone conversation and Ciccone returned to the car, to give a few brief directions. "We're going to look over Import Station Three," he explained. "There are two ways we might track this thing down. The first is to localize the source of the active gases by testing more air samples at a lower altitude. They're going ahead with that, and there's not much I can do to help. The second, assuming that bomb materials are still being shipped in, is to check the import stations through which all trucking passes."

"You sound pretty certain that it is a bomb."

"Without having any idea who would want to build one here and now, I'd say the probability was about twenty-five percent and growing all the time."

Unconsciously, Macomb gave the car another ten miles an hour's worth of gas.

Traffic was light, and they made good time to the import station. As they entered the vast, warehouselike building, Rob said: "I thought this'd be the station to inspect because those aerial tests seem to localize the thing between ten and fifty blocks northwest of here. Normally, I wouldn't suspect this station of having a leak; they have the best equipment of any. They even make chemical analyses of samples of any cadmium that passes through."

"Cadmium? Why?"

"It's one way you might shield U-235 from the radiation detectors. Alloy it with plenty of cadmium and no neutrons get out. Just one of the dodges we have to be prepared for."

Inside the building, three lines of trucks were being sent slowly through what resembled roughly an assembly line. First the walls of the truck would be tested to insure that they were not radiation-absorbent, then a few of the crates, chosen at random, would be broken open and inspected in the same way. Following this, the truck would be driven slowly down a long double line of confusingly different instruments, and would wait until it had been given the green light by the operators of all the instruments before it proceeded into the Sector. By this time the next truck would have finished its preliminary inspection and would be ready to roll through.

The most important of the detectors were modifications of the familiar Geiger-Mueller counter. An alpha particle, proton, or other emission would ionize the gas between two charged plates, allowing discharge. The discharges would be stored on a condenser, which in turn discharged through a glow tube if the counter operated more than a certain number of times in a given interval.

Ciccone and Macomb stood at one corner of the floor watching the procedure. Ciccone said: "It's not as effective as you might think. The stuff might be brought through here by packing it in the middle boxes of a big truckload,

where the outside boxes would shield it. Those guys don't dig down and get at the inside often enough."

"I should think this'd be one job where they'd be more than willing to do a little extra work just to make sure."

"No, people aren't that way. It's a lot of work to half-unload one of those trucks. This is just a job to most of the men, no matter how hard we try to make it something more; it's just their job, and they make it as easy for themselves as they can.

"Today they're being pretty thorough, though; when I called Charlie I told him to needle the boys up a bit."

"So I see." A large Diesel crane was being used in one of the assembly lines to remove the contents of one truck for individual testing. Several men were clustered around with hand-test sets. In a few minutes Rob went over, motioning Crate to accompany him.

"One thing," he whispered on the way, "whatever you see, don't act more than normally suspicious. You can't forget the possibility that the truck driver, or even one of our men, might be an agent. Hello, Sam. What you got here?"

"Radium dial watches. Darn things scare the pants off us every time. Compared to the little tiny bloops we get on our meters from most of this stuff, they look like Hiroshima."

"Been getting many?"

"Yeah, a good few."

"I hope you check the inside boxes pretty often to make sure the watches' emissions aren't masking something else underneath."

"Yeah, we've been doing that."

"Well." Rob looked down at the one crate out of the truckload which contained the watches. It had been opened, and several of the carefully packed boxes removed. An idea struck him, and he mentally noted the address on the crate, while apparently examining the watches. The watches were a standard American make.

"Well, keep up the good work, Sam," he said casually. "Oh, Sam. Have you seen the *Dispatch* this morning?"

"No, why?"

"Never mind." After watching a few more trucks pass uneventfully by, he left, accompanied by Macomb.

"Anson Mercantile Company," he said pensively as they climbed back into the car; "no street or number given. As I remember, it's about ten blocks west and four north. Suppose you let me drive, I think I can find it. If I have to, I'll ask a cop, but I didn't want to ask in there."

He did not have to ask a cop. At Anson's, the two of them looked enough like retailers to get into a saleman's office without delay. Rob interrupted the salesman's commercial cordiality by showing an F.B.I. badge, then asked without explanation, "Who's buying up that shipment of watches that's just coming in?"

"Why—let's see. I don't believe they're all ordered yet." He showed no inclination to continue.

"Who buys watches from you?" Rob prompted.

"Well—" The man listed several jewelry and department stores. "Those are the principal ones."

This was not going to be quite as simple as Rob had hoped. "Have any of them specified any individual shipments, rather than just naming brands?"

"I wouldn't know. I don't have anything to do with—"

"I think you know."

"What is this about, anyway?"

Rob debated whether to fib or to bully the man with his F.B.I. badge; he decided on the former course. "There's been some highjacking of watches, and we're trying to track it down." It didn't sound at all plausible, but the man, though baffled, was apparently satisfied.

"Well, now that you mention it," he admitted, "Grelner's has specified shipments several times." He stopped, tentatively.

"That's all," said Ciccone, and he and Macomb left, trying to look like G-men.

"Well," commented Rob, "I guess we can assume for now that he was telling the truth."

"Might I ask you something, sir?"

"Ask me what?"

"The same thing that fellow in there asked you: what the heck is this all about?"

Rob laughed. "I'm sorry. Those watches looked pretty innocent, didn't they, to be causing all this? But we have to follow up the implausible leads, because all the plausible ones get investigated at the import station. This one is 'highly nontrivial,' as my math prof used to say."

"Look. We let radium dial watches through the import station because no one could possibly extract the fissionable substances from the phosphorescent paint on those things without revealing themselves —even if they could get enough into the city that way. But there's another possibility. What if, instead of natural uranium, you were to use Pu-239, ordinary plutonium, in your phosphor-

escent paint? It's an alpha-emitter with long half-life, like common U-238; our instruments couldn't tell the difference. You'd have the job of purifying after you got the stuff in, and you'd have to get in an awful lot. It's just possible, just barely. And all the probable things, as I say, are checked."

"But it'd take so long to accumulate enough plutonium for a bomb. They couldn't be anywhere finished now, could they?"

"Sure could. They could have been accumulating the stuff for years without giving themselves away. It wouldn't be until they started purifying that Sneezy—the aerial radioactivity detector—would show anything. That's happened. We'd better follow up on Grelner's, and if it's not that, we'll start looking around again. Grelner's did, after all, ask for particular shipments—those shipments, maybe, that they knew were loaded with plutonium. They wouldn't buy up the whole shipment, because that would seem peculiar to the wholesalers, and the Pu-239 watches are, I suppose, perfectly usable as such. They wouldn't ship the watches in direct to the store, because it's not usual business practice.

"Everything fits. Which in itself proves nothing. Still, we can't afford not to check it. I don't think I can get much farther with this investigating, I better order a search right now." They had been walking toward the store; now Rob started once more for a phone. "You call police, give my name and the code word 'antipasto', and say 'Grelner's Department Store.' I'll be calling the import station for some detectors."

Luckily Schmidt's Drugstore had two empty phone booths. Nobody looked up as they walked in and slipped into the booths.

Ciccone, as he dialed his number, had a sudden vision. A pillar of multicolored smoke rising from the city, erasing the Bronx and Manhattan down to Central Park, shattering windows in Nyack, lighting up the Albany sky. A nightmare, a familiar and a very real nightmare, an accepted part of modern life, something you couldn't get away from; and it seemed more immediate than ever right now. Trying to pretend it was just fancy, he looked out of the booth at the girl wiping off the drugstore counter, the middle-aged woman buying toothbrushes, the suspendered loafer thumbing through the magazines. He thought the commonplaceness of Schmidt's Drugstore might be reassuring; but it didn't help.

"Import Station Three."

"This is Ciccone. Could I speak to Sam?"

Again he waited. The nightmare was still there, and somewhere, quite likely just a few blocks from where he was now, were the few ounces of metal that might be the nightmare.

"Hello. Hello, Sam. Send down—*antipasto*—send down all your mobiles, except for one full battery to be left at the station. Grelner's Department Store. Know where it is?"

"Sure do. Right down." Sam hung up before Rob had a chance to tell him to hurry. He knew that an order like that in a situation like that, just plain meant "hurry," in capital letters.

Hurry. It might already be too late, or they might have months to spare, or there might be no danger at all. Yet the chance was always there that one minute's delay might make all the difference.

Always that chance, he thought as he and Macomb walked up the innocent-looking street toward where the police and the search men would soon arrive. The chance that the time he had wasted at the meeting last night, and the hour he had wasted this morning because of that peculiar newspaper episode, might themselves have been fatal.

"And yet," he said aloud, "assuming we get to this bomb in time—always assuming that—this man Ellsworth Bates, and whoever else he represents, may be more important than any one bomb. No number of successes can compensate for one failure—"

Crate interrupted him. "The police have started arriving!"

Ciccone knew the routine of the search; he'd been largely responsible for preparing police and search men alike for this eventuality. He knew perfectly well what had to be done, and he also knew that, since the organization was trained to function without him, there was little he could do besides helping with the details.

First a cordon had to be thrown around the block in as short a time as possible after giving the alarm. Plutonium, enough of it to make a bomb, could be taken from the block in a two-passenger coupé, or in the pockets of a few men willing to subject themselves to radioactive poisoning by carrying it inadequately shielded. So the police had to make sure that, for the present, everybody inside the cordon stayed inside.

The search men arrived not long after the police: a fleet of bizarre-looking,

specially-built trucks, roaring through the city with sirens screaming, then pulling up in a group at one side of the block. The mobile search units made up a respectable detection laboratory in themselves. They carried, in addition to the larger, more sensitive instruments, enough simple hand-test sets to arm a large force of searchers. Some of these were distributed quickly to the policemen comprising the cordon, and the first part of the search began.

A bluecoat would beckon to one of the bewildered passers-by who had been caught in the cordon, and then, while a second policeman covered him, would search the man. This consisted in passing two test sets, one held in either hand, over all parts of his body; reading them and pressing a button to recharge the electroscopes and readjust the counters' potential; and frisking him in the standard manner. He would then be allowed—ordered, rather—to leave the block. In this way the sidewalks were rapidly cleared.

Macomb left Rob's side, pad and pencil in hand, to go to where a short, well-dressed man of about sixty was being searched by two bored policemen. Rob dismissed Macomb with the mental comment, "Good story for him."

Himself he wanted to help with the big job: going through the buildings on the block, one by one, story by story, with every type of instrument from Geiger counter to uranium neutron-detector. It was a big job, it would take a lot of men a long time, and he knew they could use his help.

The detectors were already being unloaded from the trucks. Sam was organizing a group of about twenty search men to begin on the row of five- and six-story apartments that made up one side of the block.

"Say, Sam," began Rob.

"Oh, there you are," said Sam.

"I didn't see you; I was beginning to think that call was a fake. Have a counter."

"Say, Sam, why don't you start at the store itself?"

"The Sneezies are registering like hell right here—like all hell." He gave a few more instructions and the men scattered into the buildings.

Ciccone found it almost a relief to know that the source of the radioactivity had been located fairly closely. Now, all the uncertainties involved in his reasoning were resolved. It might have been that Grelner's, like the wholesaler's, was just an intermediate stage in the smuggling; it might have been that the whole lead was a false one. But it wasn't.

With Sam and one other, he started down the basement steps of the first apartment house, to begin the search at the bottom. One of the tenants was coming down from the second story and looked with amazed curiosity at their test sets and drawn guns. Sam waved him out onto the street, and the three of them continued on down.

But the tedious and dangerous hunt which they had anticipated was interrupted. Suddenly, a booming voice filled the air. Rob looked around for a loudspeaker, but, seeing none, concentrated on the words.

"You are looking," the voice said, with a slight foreign intonation, "for the bomb which is being assembled here. I would warn that we have a quantity of plutonium in excess of the critical mass. If any more men enter this block of buildings, or if anyone enters this particular building, then the bomb, which is in readiness, will be exploded."

Rob, followed by the others, ran out into the street. He didn't know why, but he felt an almost claustrophobic oppression on the apartment stairway. As if getting out of the building would do any good were an A-bomb to go off!

The voice from the hidden loudspeakers continued, to a petrified audience of policemen and search men: "We will leave our laboratory, which is that building formerly used as a warehouse by the Grelner's Store, by helicopter. You must not attempt to intercept us—"

Rob was standing beside the police captain, looking up at the expressionless row of apartment houses. The decision, he realized, was up to him. Was this a bluff, and dare they call it?

"—will, in any case, be detonated by radio in two weeks. This will give you time to largely clear the area, and the bomb will still accomplish our purpose of disruption. You must not interfere, and you must prepare for the explosion in exactly two weeks' time." A pause, then, "You are looking for the bomb which is being assembled here. I would warn—"

It was a record, and it was repeating. The whole message was in Ciccone's hands now; it was up to him. He looked nervously around him. The police captain, Macomb, and the short, well-dressed old man to whom Macomb had gone earlier. Ciccone hardly saw them.

"—enters this particular building, then

the bomb, which is in readiness, will be exploded. We will leave our laboratory—"

"It's a bluff," said Ciccone, and his voice sounded weak as death. "Enter the building."

The captain didn't move, but stared straight ahead, his jaw knotted.

"It's a bluff. If they were going to set off an A-bomb, they wouldn't give us the opportunity to clear the people out of the city, even those few people we could get out in two weeks. They'd try for maximum destruction.

"Either they're not ready, or they are and we've nothing left to lose. Enter the building."

"They're not ready," said a voice behind Rob. He turned; it was Macomb's companion. "Any group which would send agents to destroy New York, would plan that the agents also be destroyed. Thus any chance would be eliminated of this country's learning the identity of the group, and they might be spared retaliation. Only if the bomb could not be detonated would such a bluff as this be attempted, on the chance that a copter might escape."

Rob stared at the unknown in dumb amazement. The confidence and precision with which he had spoken were—inhuman.

But for the moment he ignored this remarkable interruption and turned once more to the captain. The latter's face had a look almost of resignation as he finally gave the necessary orders to about twenty of the policemen who lined the sidewalk. They hesitated; they, too, could hear that voice over the loudspeaker. "—will still accomplish our purpose of disruption. You must not interfere, and you must prepare for the explosion—"

Somehow, when the first of the policemen moved to obey, the others followed. Slowly they advanced toward a gap between two buildings, through which they could reach the spot the voice had named as the laboratory site.

"—that we have a quantity of plutonium in excess of the critical mass. If any more men enter this block of buildings—"

They advanced, and one by one disappeared through the gap. Ciccone waited. Maybe the men inside, whoever they were, had not observed the violation of their conditions. Yet.

Except for the loudspeaker, the whole street was in intolerable silence, as everyone—waited. Finally, as one, they relaxed and breathed more easily. It was not that they were absolutely certain yet that no bomb would go off, but simply that the tension could not be borne any longer.

The police captain turned to his car radio.

"In case those boys do get their helicopter off that roof," he said, "I'm going to call for some of our planes to intercept them."

Rob made a mental note to have planes added to the search plan in the future, and nodded assent.

"No," Macomb's companion interjected. "It was a bluff, but you must allow them to escape."

Rob's previous amazement was redoubled. He could find no answer except to blurt, "Who are you, anyway?"

"Ellsworth Bates."

Before Ciccone could reply, all eyes were turned upward by a shout from one of the search men standing nearby. A helicopter was hovering over the apartment buildings, drifting slightly in the wind, and rising.

The captain turned again to his radio, but was halted by the urgency in Bates' voice as he repeated: "No, they must escape. If they are captured, it will be discovered whom they represent, and this country will certainly open fire in retaliation. Every trace of their identity must be lost if there's going to be any chance of peace. Don't you see? It doesn't matter that they are the aggressors, that we, in a sense, would be in the right were we to fight them—whoever they are. The only thing we must consider is the impossibility of our fighting any war with anybody, now. Unfortunately, it's a thing our government, and our people, will probably not consider if these men are identified.

"The whole thing can be reported to the Security Council. They can investigate—secretly. The United States must not investigate."

He paused. "Sabotage bomb attack is the only method of atomic warfare that can be used as long as the Security Council controls the world's atomic power. Fissionable elements are rigidly controlled, they're hard to get, no one can get enough of them away from the Security Council's jurisdiction to arm a fleet of rockets. And a fleet is what you'd need to stand a chance of getting through a modern radar-rocket defense screen. Sabotage bomb attack is the only thing left.

"Until open warfare breaks out. Then, one or both of the warring nations defy the Security Council, grab all the fission-

able elements they can, and what have you? Chaos. Ruin. If you like to put it that way, the end of civilization. Once the Security Council's power is broken and the rocket-atomic war starts, we're lost, that's all.

"Mr. Ciccone, I realize you're in charge here, and I'm unable to force your decision. Nevertheless, you've *got* to let that copter get away—delay your pursuit, say, ten minutes, and don't make it seem deliberate. More than that, you've got to destroy the evidence in that building—again accidentally—and, if possible, destroy so much that it can't be proved a bomb was ever in the process of construction."

He stopped. Rob looked up to where the helicopter was dwindling into the distance. "Mr. Bates, if there has been one bomb, there can be another, maybe from the same source."

"No number of successes can make up for one failure. Precisely. But we wouldn't avert that possible failure by tracing down this bomb attempt. We'd precipitate it.

"Granted, we'd find the culprit's identity. But after the cities of this and every other country had been destroyed, it'd be small consolation to know who started the thing."

Then something happened inside Rob, and the nightmare was on him again. The light too bright to be seen, the sound too loud to be heard, the horror too great for any man to know. He sighed, and spoke to the captain:

"You heard what he said?"

"Yes."

"Do what he said about the helicopter. The rest of it, forget. I mean that—forget it."

Ciccone sat with Macomb and Bates in the front room of Crate's Greenwich Village flat, recounting the steps he had taken to follow Bates' plan. "It may work out," he said. "No one's been all the way inside the lab yet, except Sam and me. The lab will be accidentally destroyed tonight, after the plutonium has been removed and Sam has seen plenty of things which were not there at all. And, Mr. Bates, if your spell over the newspapers is as great as Macomb says it is, they may all print our version of the story." He indicated a *Dispatch* extra in his hand. "The radioactives were brought in by private experimenters dodging the U.N.O., they tried the bomb bluff in order to escape, and they then eluded police pursuers. No matter how much perjuring we do it's a weak story."

"No," replied Bates, "with a few loopholes patched up, it'll go. If we're long on theorizing and minimize the actual faking; we'll get our result without much risk. And don't worry about the perjury; this is one end that justifies any means."

There was a silence while Ciccone gathered his courage. Bates was no longer the evil genius he had seemed earlier in the day; nevertheless courage was required to begin, "So now we have one success—we've postponed the fatal failure a little further."

Bates smiled. "Unless I miss my guess, you're getting back to decentralization."

Macomb took up the theme. "Yes," he said, "that problem's still there. This bomb's been found, this crisis may soon be over; but there'll be others. We'll never have even relative safety until everything is so uniformly distributed that no one bomb can destroy more than one of the old block-busters could now."

"I'll try to explain the thing to you," Bates began slowly. "You're right, that would be the only way to safety. You're also right in thinking that I've been suppressing the movement toward decentralization. Now wait a minute; please don't interrupt. I know I seem to be contradicting myself, but let me start from the beginning.

"Ten years ago several of the small European nations, which had not been getting much information on nuclear physics from the larger nations, independently developed working chain-reactions. Tension mounted, and a large-scale atomic war might have resulted had not the world been too exhausted from the recent World War II. As it was, everybody got such a bad case of the jitters that the affair was halted before the A-bomb was used.

"This world-wide case of the jitters had other effects, you remember. The Security Council was quickly given supervision over all piles, plus sizable military and intelligence forces. Second, the movement for decentralization was started."

"And stopped," put in Ciccone.

"Yes. To what, if I may ask, did you ascribe its failure?"

"Lack of vision on the part of—well, leaders of industry. People like you could have swung it."

"No. The people whom you call leaders of industry saw everything you saw in the situation, and they did try to swing it. The thing is, when they got right down to cases they saw something you missed; to be specific, they saw that decentralization was impossible."

"Impossible?"

"Because of a factor which the scientist finds it easy to ignore: the terrific inertia of our civilization. Here's the way it works. New York businessmen see that the world would be a much safer place if all business were to disperse away from the big metropolitan centers. They think it would be fine if this were to be done. But they can't do it themselves if, say, Prague businessmen are going to remain concentrated, because it'd be a big financial blow to New York to stand the expense of moving and to give up their ready access to transportation. They wouldn't be able to compete with Prague, or London, or Calcutta, as the case might be—whatever city didn't go along. Unless everybody will take the step, nobody will take it. It has to be world-wide, and ten years ago the world wasn't unified enough.

"You remember the 1929 crash? A little before your time, I guess. It was the same thing. The economists saw it coming several years ahead, but no one could duck out of the wave of overinvestment, because if they did, their competitors would not, and would continue to make profits from the boom. Everyone had to keep riding the wave as long as possible, even though they knew such a policy was just insuring that the crash, when it came, would be really serious. There you are: inertia. Our overgrown civilization starts going in one direction, and it's just too much for individuals to stop.

"So decentralization was impossible ten years ago. With different conditions and with a stronger political movement, it might have gone; but it didn't. We took what seemed like the next best plan, radar screens plus search programs, and so far it's worked.

"Today, gradual decentralization has progressed to some extent, thanks to improved transportation and individuals' mistrust of cities. A new movement for the abrupt sort of decentralization would have some chance—less inertia now to overcome; but if it succeeded it would be very dangerous.

"In the last ten years, many things have changed. Reconstruction of the destruction of World War II. is to all intents and purposes finished; capital is freed and looking for new investment opportunities; manufactured goods are looking around for markets. It's the type of situation where motives for aggression may be present, and everyone's jittery again. The jitters are not nearly so widespread as they were before, or even as they were after Hiroshima and Nagasaki, but they're having a much worse effect, and they're building up. Certain groups in several different countries are beginning to think seriously of atomic warfare, of beating the other guy to the punch and grabbing whatever's left when the smoke clears. Many of those who aren't considering it, are suspecting others. And everybody has to keep his defenses up.

"Now. What *are* our defenses? Let me list them again: radar screens, searches, and Security Council supervision of fissionable elements. Well, you tell me, Mr. Ciccone—what would happen to the effectiveness of your search program if New York were to begin tomorrow to move en masse to the Mohawk Valley?"

"Yes, I see what you mean. We'd have a hard time keeping up even a pretense."

"You certainly would. New York could be blasted before it had got well started moving. Another thing: atomic power plants, too, are centralized, to simplify the Security Council's job of control, so no doubt you'd ask that they be included in the program of dispersal. But think of the confusion involved in moving billions of dollars' worth of industrial plant. How could a merely human Security Council prevent the smuggling out, somewhere, of a few hundred pounds of U-235 or Pu-239?

"No, the pressure's on, and we have to stick by the choice we made.

"Our civilization: a great, big, overgrown truck going much too fast. Suddenly the road became dangerously narrow, and slippery besides, but the truck was too big and it was going too fast. It couldn't stop. Now we have only a few inches to spare on either side of our wheels, but we still can't do what you suggest, stop, get out, and look for a detour. No, we've chosen our road and we've got to stick to it.

"Not much seems to be changed, at first glance—the truck's engine still runs smoothly—the steering gear still responds—even the driver isn't in such bad shape. Yet come tomorrow, it may all be over. If we don't steer straight, it certainly will be.

"Makes quite a picture. Our magnificent, overgrown, bungling civilization going on its own magnificent and senseless way because it is so big that nothing can stop it, so big that it can't even stop itself."

Bates stopped speaking, but neither Ciccone nor Macomb answered. There was no answer. Ten years ago, there might perhaps have been, but not now.

The Cure

By LEWIS PADGETT

The simplest way to drive a sane man mad is to face him with an absolutely insoluble dilemma. There are more complex ways, of course—but the cure gets complicated, too, and sometimes fails—

WHEN Dawson got back from his vacation in Florida, he was feeling no better. He hadn't expected a miraculous cure. In fact, he hadn't expected anything. Now he sat morosely at his desk, staring out at the tower of the Empire State and vaguely hoping it would topple.

Carruthers, his partner in the law firm, came in and bummed a cigarette. "You look lousy, Fred," he remarked. "Why not go out and have a drink?"

"I don't want a drink," Dawson said. "Besides, it's too early. I had enough liquor in Florida."

"Maybe too much."

"No. What griped me was . . . I dunno."

"Great psychoses from little acorns grow," Carruthers said, his plump, pale face almost too casual.

"So now I'm nuts?"

"You could be. You could be. Give yourself time. Why this abnormal fear of psychiatrists, anyway? I got psychoanalyzed once."

"What happened?"

"I'm going to marry a tall, dark woman," Carruthers said. "Just the same, psychiatry isn't in the same class with astrology. Maybe you bit your grandmother when you were a child. Drag it out in the open. As long as you keep thinking, 'What big teeth you have,' you'll dwell in a morass of mental misery."

"I'm not in a morass," Dawson said. "It's just—"

"Yeah. Just— Listen, didn't you go to college with a guy named Hendricks?"

"I did."

"I met him in the elevator last week. He's moved here from Chicago. Got offices upstairs, on the twenty-fifth floor. He's supposed to be one of the best psychiatrists in this country. Why not go see him?"

"What could I say?" Dawson asked. "I'm not followed by little green men."

"Lucky man," Carruthers said. "I am. Day and night. They drink my liquor, too. Just tell Hendricks you smell dead flies. You probably pulled the wings off an anopheles when you were a tot. It's as simple as that, see?" He rose from his chair, put his hand on Dawson's shoulder, and added quietly, "Do it, Fred. As a favor to me."

"Um. Well— O.K."

"Good," Carruthers said, brightening. He looked at his wristwatch. "You're due at his office in five minutes. I made the appointment yesterday." He fled, ignoring the curse Dawson flung at his head. "Room twenty-five-forty," he called, and slammed the door.

Scowling, Dawson located his hat, left word with the receptionist as to his whereabouts, and rode the elevator up. He met a short, fat, cherubic man in tweeds emerging from twenty-five-forty. Mild blue eyes considered him through glistening contact lenses.

"Hello, Fred," the man said. "Don't know me now, eh?"

"Raoul?" Dawson's voice was doubtful.

"Right. Raoul Hendricks, somewhat fatter after twenty-five years, I'm afraid. You look the same, though. Look, I was just going down to your office. I didn't have a chance to eat breakfast this morning. What about a bite downstairs?"

"Didn't Carruthers tell you—"

"We can kick that around better over food." Hendricks steered Dawson back to the elevator. "There's a lot I want to ask you about. The college chaps. I didn't keep in touch. I was in Europe most of the time."

"I kept in touch," Dawson said. "Remember Willard? He's just been indicted in an oil mix-up—"

They talked over onion soup and through the entrée. Hendricks listened, mostly. Sometimes he watched Dawson, though not pointedly. They were in an isolated booth, and, after coffee had been

served, Hendricks lighted a cigarette and blew a smoke ring.

"You want a snap diagnosis?" he asked.

"O.K."

"You're worried about something? Do you know what it is?"

"Certainly I know," Dawson said. "It's a sort of daydream. But Carruthers told you that."

"He said you smelled dead flies."

Dawson laughed. "On a window-pane. A dusty window-pane. Probably it isn't that at all. I just got the impression, no more than that. I never see anything. It's a sort of extension of sensory consciousness."

"It never occurs in your sleeping dreams?"

"If it does, I don't remember. It's always a flash. The worst part is that I *know* at the time that it's the window-pane that's real. Usually it happens when I'm doing some routine stuff. Suddenly I get this flash. It's instantaneous. I feel, very certainly, that whatever I happen to be doing at the time is a dream. And that really I'm somewhere smelling dead flies on a dusty window-pane."

"Like the Red King? You think somebody's dreaming you?"

"No. I'm dreaming—this." Dawson looked around the restaurant.

"Well," Hendricks said, "possibly you are." He stubbed out his cigarette. "We get into metaphysics at that point, and I'm lost. It doesn't matter which *is* the dream. The main thing is to believe in the dream while you're having it. Unless it's a nightmare."

"It isn't," Dawson said. "I've had a pretty good life so far."

"Then where are we? You don't know what's worrying you. The dream's merely a symbol. Once you realize what the symbol represents, the whole structure collapses, and any neuroses you may have are gone. As a general rule, anyway."

"Ghosts can't stand light, is that it?"

"That's it, exactly. Don't misunderstand me. Neuroses can build up eventually to true psychoses. You've got something like an olfactory hallucination. But there's no accompanying delusion. You know the window-pane isn't there."

"Yeah," Dawson said, "but there's something under my hand."

"Tactile hallucination? What does it feel like?"

"Cold and hard. I don't know what it is. If I move it, something will happen."

"Do you move it?"

After a long moment Dawson said "No," very softly.

"Then move it," Hendricks advised. He took out pencil and paper and adjusted his watch. "Let's have a jury-rigged word-association test. O.K.?"

"Well—why?"

"To find out the causation of your window-pane. If there's a mental block, if the censor's working, it'll show up. Spring cleaning. If you clean a house regularly, you save a lot of work later. No chance for cobwebs to accumulate. Whereas if you let the stuff pile up, you're apt to get the real psychosis, with all the trimmings. As I just said, it's a question of finding the cause. Once you locate that, you know it's a straw dummy, and it doesn't bother you any more."

"What if it isn't a straw dummy?"

"Then, at least, you've recognized it, and can take steps to get rid of the incubus."

"I see," Dawson said slowly. "If I'd been responsible for a man's death years ago, I could buy peace of mind by taking care of his orphaned children."

"Read Dickens," Hendricks said. "Scrooge is a beautiful case history. Hallucinations, persecution complex, guilt complex—and atonement." He glanced at his watch. "Ready?"

"Ready."

When they had finished, Hendricks blinked at the results. "Normal," he said. "Too normal. A few odd quirks—but it takes more than one test to get any definite result. We don't want to be empirical—though it's sometimes necessary. Next time you have that daydream, move the gadget under your hand."

"I don't know if I can," Dawson said.

But Hendricks only laughed. "Neural paralysis of the astral," he suggested. "I'm relieved, Fred. I'd rather gathered you were slightly off your rocker. But the layman always overestimates mental quirks. Your friend Carruthers has probably got you a bit worried."

"Maybe."

"So you've got a hallucinatory daydream. That isn't uncommon. Once we find the cause, you'll have nothing left to worry about. Come in tomorrow, any time—give me a call first—and we'll give you a physical checkup. More coffee?"

"No," Dawson said, and presently left Hendricks at the elevator. He was feeling irrationally relieved. Though he discounted a good deal of the psychiatrist's professional optimism, he felt that the man's argument held water. There was logic in it. And certainly it was illogical

to let a daydream influence his moods so strongly.

Back in his office, Dawson stood at the window, staring out over the serrated skyline. The low, hushed roar of traffic mounted from the canyons below. In forty-two years he had come a long way, partner in a law firm, member of a dozen clubs, taking an active interest in a variety of matters—a long way, for a boy who had begun his career in an orphaned asylum. He had married once, but there had been a divorce, amicable on both sides. Now it was more convenient to maintain a bacholar apartment near Central Park. He had money, prestige, power—none of which would help him if the hallucination developed.

On impulse he left the office and visited a medical library. What he found only confirmed Hendricks' remarks. Apparently, as long as he didn't believe in the real existence of the dusty windowpane, he was fairly safe. When he did, dissociation stepped in, and all but subjective, false logic would fall. Men have a vital need to believe they are acting rationally—and, since so many basic motives are too hidden and complicated to unscramble, they assign arbitrary meanings to their actions. But why a dusty windowpane—

"Yeah," Dawson thought, thumbing through pages. "If I believed in this dream, I'd . . . uh . . . erect secondary delusions. I'd think of a good reason why there *was* a windowpane. Only there isn't any reason, luckily."

As he walked out of the library, and saw the stream of street traffic before him, he suddenly felt that he was dreaming. And the windowpane was back again.

He knew he was lying close against it, his nose almost touching the glass, inhaling dust with every breath, and the smothering, dreary, somehow brownish odor of dead flies. It was singularly horrid—that feeling of suffocation and dead despair. He could feel the hard something under his hand, and he knew with a sudden sense of urgency that unless he moved it—*now*—he was more than likely to smother there with his nose against the glass, smother from sheer inertia, inability to move. He knew he *must* not slip back into the dream of being Dawson. This was reality. There was nothing tangible about Dawson and his fool's paradise and his dream-city of New York. Yet he could lie here and die with the smell of dead flies in his nostrils, and Dawson would never suspect until that dreadful last moment between waking and death, when it was too late to move the . . . the hard object beneath his hand.

Traffic roared at him. He stood at the curb, white and sweating. The unreality of the scene before him was briefly shocking. He stood motionless, waiting until the hollow world had resumed its tangibility. Then, his lips tight, he hailed a taxi.

Two stiff shots of whiskey were comforting. He was able to contemplate working on the current brief, a liability case which presented no difficulties. Carruthers had gone to court, and he didn't see his partner that afternoon. Nor did the—hallucination—recur.

But, after dinner, Dawson telephoned his ex-wife, and spent the evening with her at a roof-garden. He didn't drink much. He was trying to recapture something of the vital reality that had existed during the early part of their marriage. But he wasn't too successful.

The next morning Carruthers came in, perched on Dawson's desk, and cadged a cigarette. "What's the verdict?" he wanted to know. "Do you hear voices?"

"Often," Dawson said. "I'm hearing one now. Yours."

"But is Hendricks any good, really?"

Dawson felt unreasonably irritated. "Do you expect him to wave a magic wand? All therapy takes time."

"Therapy, huh? What did he say was wrong?

"Nothing much." Dawson didn't want to discuss it. He opened a law book pointedly. Carruthers tossed his cigarette into the wastebasket and shrugged.

"Sorry. I'd thought—"

"Oh, I'm all right. Hendricks is pretty good, really. Hy nerves are a bit shot."

Comforted, Carruthers said something and went back to his office. Dawson turned a page, read a few words, and felt things close in. The morning sunlight, slanting through the window, faded abruptly. Under his hand was a cold, hard object, and strong in his nostrils was the dusty smell of despair. And this time he knew it was reality.

It did not last long. When it had gone, he sat quietly, staring at the hollow desk and the hollow wall beyond it. The sounds from the traffic below were dream-noises. The curl of smoke spiraling up from the wastebasket was dream-smoke.

"I hope you don't think you're real," Tweedledum said scornfully.

He noticed that the smoke had changed to orange flame. The curtain caught fire. Presently he would waken.

Someone screamed. Miss Anstruther, his secretary, stood in the doorway, pointing. After that, there was confusion, shouting, and the spurting of a fire extinguisher.

The flames died. The smoke vanished.

"Oh, dear," Miss Anstruther said, wiping a smudge from her nose. "It's lucky I came in when I did, Mr. Dawson. You had your nose in that book—"

"Yeah," Dawson said. "I didn't even notice. I'd better speak to Mr. Carruthers about throwing cigarettes in the wastebaskets."

Instead, he telephoned Hendricks. The psychiatrist could see him in an hour. Dawson passed the time with a crossword puzzle, and, at ten, went upstairs and stripped. Hendricks used stethoscope, blood-pressure gadget, and other useful devices.

"Well?"

"You're all right."

"Sound as a nut, eh?"

"A nut?" Hendricks said. "Come on. Let's have it. What happened?"

Dawson told him. "It's like epilepsy. I don't know when I'll have these attacks. They've never lasted long so far, but they might. And afterwards—the dream-feeling hangs over. I knew very well that there was a fire in the wastebasket, but it wasn't a real fire."

"Daydreams are apt to carry over a bit. Reorientation isn't always instantaneous."

Dawson chewed on a fingernail. "Sure, but—suppose Carruthers was falling out of a window? I wouldn't have tried to stop him. Hell, I'd have walked off a roof myself. I'd have known it wouldn't have hurt me. It's a *dream.*"

"Do you feel you're dreaming now?"

"No," Dawson said, "not now, of course! It's only during these attacks, and afterward—"

"You felt that hard object under your hand?"

"Yeah. And the smell. There was something else, too—"

"What?"

"I don't know."

"Move that object. It's a compulsion, in four-bit words. And don't worry about it."

"Not even if I walk off a roof?"

"Stay away from roofs for a while," Hendricks said. "Once you find out the meaning of this symbolism, you'll be cured."

"And if I don't, I'll get secondary delusions."

"You've been reading up on it, eh? Look. If you think you're the richest man in the world, and you haven't got a dime in your pocket, how'll you rationalize that?"

"I don't know," Dawson said. "Maybe I'm eccentric."

Hendricks shook his head, his plump cheeks bobbing. "No, you'll develop the logical delusion—a supplementary one—that you're the victim of an organized plot to rob you. Catch? Don't try to assign phony meanings to your dusty windowpane. Don't start thinking a little man named Alice is popping out of the woodwork with a windowpane tucked under his arm. Or that the glass-blowers' union wants to persecute you. Just find the real meaning behind the symbolism. As I told you. Move that gadget under your hand. Don't simply be passive about it."

"O.K.," Dawson said. "I'll move it. If I can."

He dreamed that night, but it was a typical dream. The familiar hallucination didn't emerge. Instead, he found himself standing on a gibbet, a rope about his neck. Hendricks came rushing up, waving a paper roll tied with a blue ribbon. "You're reprieved!" the psychiatrist shouted. "Here's your pardon! Signed by the governor." He thrust the roll into Dawson's hands. "Open it," he ordered urgently. "Untie the ribbon." Dawson didn't want to, but Hendricks kept insisting. He pulled at the ribbon. As he did, he saw that it was tied to a long cord that snaked across the platform and vanished from sight beneath it. A bolt clicked. He felt the trapdoor quiver under his feet. By pulling at the ribbon, he had opened the drop; he was falling.

He woke up, sweating. The room was dark and silent. Cursing under his breath, Dawson got up and took a cool shower. He had not had nightmares for years.

There were, after that, two more interviews with Hendricks. Each time the psychiatrist probed more deeply. But the refrain never altered. *Recognize the symbol. Move your hand. Remember.*

On the third day, as Dawson sat waiting in Hendricks' outer office, he remembered.

The familiar, leaden, sick inertia swept over him. Desperately he tried to focus on the buildings outside the window. But he could not battle the tide. At the last moment Hendricks' advice occurred

to him, and, as he felt the cold, hard object under his palm, he made a tremendous effort to move his hand.

To the left, something told him. *To the left.*

It was hard to battle that lethargy, that smothering, dusty suffocation of despair. And it was hard to move. But he strained to send the impulse down his arm, into stiff fingers, and the effort told. He felt something click into place, and . . . and—

He remembered.

The last thing before—

Before what?

"Vital therapy," a voice said. *"We grow fewer yearly. And we must guard against that plague."*

Karestly ran an eight-fingered hand over his sweating, bald head. "The tests show you need it, Dawsao."

"I hadn't—"

"You wouldn't know of course. It'd be imperceptible except by the instruments. But you need the therapy, that's certain."

"I can't spare the time," Dawsao said. "The simplification formulas are just beginning to clear up. How long must I stay in the vorkyl?"

"Half a year," Karestly said. "It doesn't matter."

"And Pharr went in last month."

"He needed it."

Dawsao stared at the wall, made a mental signal, and opaqueness faded to translucence and transparency. He could see the City.

Karestly said, "You'd never vorkylled before. You're one of the youngest. It isn't bad. It's stimulating, curative, and necessary."

"But I feel normal."

"The machines don't lie. The emotion factor is wrong. Listen to me, Dawsao. I'm a great deal older than you, and I've been in the vorkyl twelve times."

Dawsao stared. "Where to?"

"Different eras each time. The one best fitted for my particular warp. Once it was Brazil in 1890. Another time, Restoration London. And the Second Han Empire. I had plenty to do. I spent ten years in Brazil, building a rubber empire."

"Rubber?"

Karestly smiled. "A substance—it was important at that time. I kept busy. It's fine therapy. In those days, the only therapy they knew involved painting, constructional—visual and tangible, not the emotional and psychic therapy we use. However, their minds weren't developed."

"I hate the idea of being shut up in a five-sensed body," Dawsao said.

"You wouldn't know any better. There's the artificial mnemonic angle. Your life-force will take possession of your body that's created for you at the therapic epoch we choose, and you'll have a full set of phony memories, created especially for that period. You'll probably begin as a child. There may be temporal compression, so you'll be able to live thirty or forty years in a half-year of our time."

"I still don't like it."

"Time travel," Karestly said, "is the best therapy known today. You live in a new environment, with a new set of values. And *that's* the vital part. You get away from the current herd instinct that's caused all the trouble."

"But—" Dawsao said, "but! Only four thousand of us still sane, in all the world! And unless we work fast—"

"We're not immune. The whole trouble is that for hundreds of generations the race has followed false values, which conflicted with the primary instincts. Overcomplication plus oversimplification, both in the wrong places. We haven't kept pace with our growing mentality. There was a man—Clemens—who owned a mechanical typesetter that was perfect except for one thing. It was too complicated. When it worked, it was ideal, but it kept breaking down."

"Old stuff," Dawsao said. "I know the trouble. The machines are so enormously complicated now that humans can't keep up with them."

"We're solving it," Karestly said. "Slowly, but surely. There are four thousand of us. And we know the right therapy now. After you've had six months in the vorkyl, you'll be a new man. You'll find temporal therapy is fool proof and absolutely certain."

"I hope so. I want to get back to my work."

"If you went back to it now, you'd be insane in six months," Karestly pointed out. "Temporal travel is like preventive serum shots. "You'll be occupied; we'll send you back to the twentieth century —"

"That far back?"

"That period's indicated, in your case. You'll be given a complete set of artificial memories, and, while you're in the past, you'll have no consciousness of reality. Of *this* reality, I mean."

"Well—" Dawsao said.

"Come on." Karestly rose and floated toward the transport-disk. "The vorkyl's

ready for you. The matrix is set. All you have to do is—"

Dawsao got into the case. It closed behind him. He took a last look at Karestly's friendly face and tightened his hand on the control. He moved it toward the right.

Then he was Fred Dawson, with a complete set of artificial memories, in the orphan asylum in Illinois.

But now he lay in the vorkyl, his nose against dusty glassocene that smelled of dead flies, and the vitiated air tore at his throat as he tried to breathe. All was in gray semidarkness around him. He sent out a frantic thought-command.

Somewhere light grew. The distant wall faded to transparency. He could see the city.

It had changed. It was older. And a heaped pile of dust made a canopy atop the vorkyl in which he rested.

The immense, red sun washed the city in bloody gloom. There was no sign of organized activity. Figures moved here and there in the ruins. He could not make out what they were doing.

He looked for Administration Building, the last stronghold of the race. It had altered, too. A long time must have passed since he had entered the vorkyl. For ruin had touched the great tower, and the white, naked shapes that crawled up and down the structure showed no sign of intelligence. The last light had gone out, then. The tide of madness had engulfed the four thousand.

He used his seventh sense of perception, and his guess was confirmed. In all the world, there was no sanity. The herd instinct had triumphed.

And he could not breathe. That suffocating horror was a reality now. The last oxygen left in the sealed case was rapidly being absorbed by his now-active lungs. He could, of course, open the vorkyl!—

To what?

Dawsao moved his hand. The control swung to the right again.

He was sitting in the psychiatrist's outer office. The receptionist was at her desk, scribbling something; she didn't look at him. The white light of morning sunshine made patterns on the rug.

The reality—

"You may go in now Mr. Dawson."

Dawson stood up and walked into Hendricks' sanctum. He shook hands, muttered something, and sank into a chair.

Hendricks referred to his charts. "O.K., Fred," he said. "Feel up to another word-association test? You're looking a bit better."

"Am I?" Dawson said. "Maybe I know what the symbol represents now."

Hendricks looked at him sharply. "Do you?"

"Maybe it isn't a symbol at all. Maybe it's a reality."

Then the familiar sensation came back, the dusty, suffocating claustrophobia, and the windowpane, and the brownish, dry smell, and the sense of terrible urgency. But there was nothing to be done about it now, nothing at all. He waited. In a moment it was gone again, and he looked across the desk at Hendricks, who was saying something about the danger of secondary delusions, of rationalizing.

"It's a matter of finding the right sort of therapy," insisted the hollow man.

Rescue Party

By ARTHUR C. CLARKE

The mission was to rescue a fraction of a population—because the Galactic Union hadn't known that the Earth's Sun had inhabited planets until too late. But they did know it was going Nova!

Who was to blame? For three days Alveron's thoughts had come back to that question, and still he had found no answer. A creature of a less civilized or a less sensitive race would never have let it torture his mind, and would have satisfied himself with the assurance that no one could be responsible for the working of fate. But Alveron and his kind had been lords of the Universe since the dawn of history, since that far distant age when the Time Barrier had been folded round the cosmos by the unknown powers that lay beyond the Beginning. To them had been given all knowledge—and with infinite knowledge went infinite responsibility. If there were mistakes and errors in the administration of the Galaxy, the fault lay on the heads of Alveron and his people. And this was no mere mistake; it was one of the greatest tragedies in history.

The crew still knew nothing. Even Rugon, his closest friend and the ship's deputy captain, had been told only part of the truth. But now the doomed worlds lay less than a billion miles ahead. In a few hours, they would be landing on the third planet.

Once again Alveron read the message from Base: then, with a flick of a tentacle that no human eye could have followed, he pressed the "General Attention" button. Throughout the mile-long cylinder that was the Galactic Survey Ship *S9000,* creatures of many races laid down their work to listen to the words of their captain.

"I know you have all been wondering," began Alveron, "why we were ordered to abandon our survey and to proceed at such an acceleration to this region of space. Some of you may realize what this acceleration means. Our ship is on its last voyage: the generators have already been running for sixty hours at Ultimate Overload. We will be very lucky if we return to Base under our own power.

"We are approaching a sun which is about to become a Nova. Detonation will occur in seven hours, with an uncertainty of one hour, leaving as a maximum of only four hours for exploration. There are ten planets in the system about to be destroyed—*and there is a civilization on the third.* That fact was discovered only a few days ago. It is our tragic mission to contact that doomed race, and if possible to save some of its members. I know that there is little we can do in so short a time with this single ship. No other machine can possibly reach the system before detonation occurs."

There was a long pause during which there could have been no sound or movement in the whole of the mighty ship as it sped silently towards the worlds ahead. Alveron knew what his companions were thinking and he tried to answer their unspoken question.

"You will wonder how such a disaster, the greatest of which we have any record, has been allowed to occur. On one point I can reassure you. The fault does not lie with the Survey.

"As you know, with our present fleet of under twelve thousand ships, it is possible to re-examine each of the eight thousand million solar systems in the Galaxy at intervals of about a million years. Most worlds change very little in so short a time as that.

"Less than four hundred thousand years ago, the survey ship *S5600* examined the planets of the system we are approaching. It found intelligence on none of them, though the third planet was teeming with animal life and two other worlds had once been inhabited. The

usual report was submitted and the system is due for its next examination in six hundred thousand years.

"It now appears that in the incredibly short period since the last survey, intelligent life has appeared in the system. The first intimation of this occurred when unknown radio signals were detected on the planet Kulath in the system X29.35, Y34.76, Z27.93. Bearings were taken on them and they were found to come from the system ahead.

"Kulath is two hundred light-years from here, so those radio waves had been on their way for two centuries. Thus for at least that period of time a civilization has existed on one of these worlds—a civilization that can generate electromagnetic waves and all that that implies.

"An immediate telescopic examination of the system was made and it was then found that the sun was in the unstable prenova stage. Detonation might occur at any moment, and indeed might have done so while the light waves were on their way to Kulath.

"There was a slight delay while the supervelocity scanners on Kulath II. were focused on to the system. They showed that the explosion had not yet occurred but was only a few hours away. If Kulath had been a fraction of a light-year further from this sun, we should never have known of its civilization until it had ceased to exist.

"The Administrator of Kulath contacted Sector Base immediately, and I was ordered to proceed to the system at once. Our object is to save what members we can of the doomed race, if indeed there are any left. But we have assumed that a civilization possessing radio could have protected itself against any rise of temperature that may have already occurred.

"This ship and the two tenders will each explore a section of the planet. Commander Torkalee will take Number One, Commander Orostron Number Two. They will have just under four hours in which to explore this world. At the end of that time, they *must* be back in the ship. It will be leaving then, with or without them. I will give the two commanders detailed instructions in the control room immediately.

"That is all. We enter atmosphere in two hours."

On the world once known as Earth the fires were dying out: there was nothing left to burn. The great forests that had swept across the planet like a tidal wave with the passing of the cities were now no more than glowing charcoal and the smoke of their funeral pyres still stained the sky. But the last hours were still to come, for the surface rocks had not yet begun to flow. The continents were dimly visible through the haze, but their outlines meant nothing to the watchers in the approaching ship. The charts they possessed were out of date by a dozen Ice Ages and more deluges than one.

The *S9000* had driven past Jupiter and seen at once that no life could exist in those half-gaseous oceans of compressed hydrocarbons, now erupting furiously under the sun's abnormal heat. Mars and the outer planets they had missed, and Alveron realized that the worlds nearer the sun than Earth would be already melting. It was more than likely, he thought sadly, that the tragedy of this unknown race was already finished. Deep in his heart, he thought it might be better so. The ship could only have carried a few hundred survivors, and the problem of selection had been haunting his mind.

Rugon, Chief of Communications and Deputy Captain, came into the control room. For the last hour he had been striving to detect radiation from Earth, but in vain.

"We're too late," he announced gloomily. "I've monitored the whole spectrum and the ether's dead except for our own stations and some two-hundred-year-old programs from Kulath. Nothing in this system is radiating any more."

He moved towards the giant vision screen with a graceful flowing motion that no mere biped could ever hope to imitate. Alveron said nothing: he had been expecting this news.

One entire wall of the control room was taken up by the screen, a great black rectangle that gave an impression of almost infinite depth. Three of Rugon's slender control tentacles, useless for heavy work but incredibly swift at all manipulation, flickered over the selector dials and the screen lit up with a thousand points of light. The star field flowed swiftly past as Rugon adjusted the controls, bringing the projector to bear upon the sun itself.

No man of Earth would have recognized the monstrous shape that filled the screen. The sun's light was white no longer: great violet-blue clouds covered half its surface and from them long streamers of flame were erupting into space. At one point an enormous prominence had reared itself out of the photosphere, far out even into the flickering veils of the corona. It was as though a tree of fire had taken root in the surface

of the sun—a tree that stood half a million miles high and whose branches were rivers of flame sweeping through space at hundreds of miles a second.

"I suppose," said Rugon presently, "that you are quite satisfied about the astronomers' calculations. After all—"

"Oh, we're perfectly safe," said Alveron confidently. "I've spoken to Kulath Observatory and they have been making some additional checks through our own instruments. That uncertainty of an hour includes a private safety margin which they won't tell me in case I feel tempted to stay any longer."

He glanced at the instrument board.

"The pilot should have brought us to the atmosphere now. Switch the screen back to the planet, please. Ah, there they go!"

There was a sudden tremor underfoot and a raucous clanging of alarms, instantly stilled. Across the vision screen two slim projectiles dived towards the looming mass of Earth. For a few miles they traveled together: then they separated, one vanishing abruptly as it entered the shadow of the planet.

Slowly the huge mother ship, with its thousand times greater mass, descended after them into the raging storms that already were tearing down the deserted cities of Man.

It was night in the hemisphere over which Orostron drove his tiny command. Like Torkalee, his mission was to photograph and record, and to report progress to the mother ship. The little scout had no room for specimens or passengers. If contact was made with the inhabitants of this world, the *S9000* would come at once. There would be no time for parleying. If there was any trouble the rescue would be by force and the explanations could come later.

The ruined land beneath was bathed with an eerie, flickering light, for a great auroral display was raging over half the world. But the image on the vision screen was independent of external light, and it showed clearly a waste of barren rock that seemed never to have known any form of life. Presumably this desert land must come to an end somewhere. Orostron increased his speed to the highest value he dared risk in so dense an atmosphere.

The machine fled on through the storm, and presently the desert of rock began to climb towards the sky. A great mountain range lay ahead, its peaks lost in the smoke-laden clouds. Orostron directed scanners towards the horizon, and on the vision screen the line of mountains seemed suddenly very close and menacing. He started to climb rapidly. It was difficult to imagine a more unpromising land in which to find civilization and he wondered if it would be wise to change course. He decided against it. Five minutes later, he had his reward.

Miles below lay a decapitated mountain, the whole of its summit sheared away by some tremendous feat of engineering. Rising out of the rock and straddling the artificial plateau was an intricate structure of metal girders, supporting masses of machinery. Orostron brought his ship to a halt and spiraled down towards the mountain.

The slight Doppler blur had now vanished, and the picture on the screen was clear-cut. The lattice-work was supporting some scores of great metal mirrors, pointing skywards at an angle of forty-five degrees to the horizontal. They were slightly concave, and each had some complicated mechanism at its focus. There seemed something impressive and purposeful about the great array; every mirror was aimed at precisely the same spot in the sky—or beyond.

Orostron turned to his colleagues.

"It looks like some kind of observatory to me," he said. "Have you ever seen anything like it before?"

Klarten, a multitentacled, tripedal creature from a globular cluster at the edge of the Milky Way, had a different theory.

"That's communication equipment. Those reflectors are for focusing electromagnetic beams. I've seen the same kind of installation on a hundred worlds before. It may even be the station that Kulath picked up—though that's rather unlikely, for the beams would be very narrow from mirrors that size."

"That would explain why Rugon could detect no radiation before we landed," added Hansur II., one of the twin beings from the planet Thargon.

Orostron did not agree at all.

"If that *is* a radio station, it must be built for interplanetary communication. Look at the way the mirrors are pointed. I don't believe that a race which has only had radio for two centuries can have crossed space. It took my people six thousand years to do it."

"We managed it in three," said Hansur II. mildly, speaking a few seconds ahead of his twin. Before the inevitable argument could develop, Klarten began to

wave his tentacles with excitement. While the others had been talking, he had started the automatic monitor.

"Here it is! Listen!"

He threw a switch, and the little room was filled with a raucous whining sound, continually changing in pitch but nevertheless retaining certain characteristics that were difficult to define.

The four explorers listened intently for a minute; then Orostron said: "Surely that can't be any form of speech! No creature could produce sounds as quickly as that!"

Hansur I had come to the same conclusion.

"That's a television program. Don't you think so, Klarten?"

The other agreed.

"Yes, and each of those mirrors seems to be radiating a different program. I wonder where they're going? If I'm correct, one of the other planets in the system must lie along those beams. We can soon check that."

Orostron called the *S9000* and reported the discovery. Both Rugon and Alveron were greatly excited, and made a quick check of the astronomical records.

The result was surprising—and disappointing. None of the other nine planets lay anywhere near the line of transmission. The great mirrors appeared to be pointing blindly into space.

There seemed only one conclusion to be drawn, and Klarten was the first to voice it.

"They *had* interplanetary communication," he said. "But the station must be deserted now, and the transmitters no longer controlled. They haven't been switched off, and are just pointing where they were left."

"Well, we'll soon find out," said Orostron. "I'm going to land."

He brought the machine slowly down to the level of the great metal mirrors, and past them until it came to rest on the mountain rock. A hundred yards away, a white stone building crouched beneath the maze of steel girders. It was windowless, but there were several doors in the wall facing them.

Orostron watched his companions climb into their protective suits and wished he could follow. But someone had to stay in the machine to keep in touch with the mother ship. Those were Alveron's instructions, and they were very wise. One never knew what would happen on a world that was being explored for the first time, especially under conditions such as these.

Very cautiously, the three explorers stepped out of the air lock and adjusted the antigravity field of their suits. Then, each with the mode of locomotion peculiar to his race, the little party went towards the building, the Hansur twins leading and Klarten following close behind. His gravity control was apparently giving trouble, for he suddenly fell to the ground, rather to the amusement of his colleagues. Orostron saw them pause for a moment at the nearest door—then it opened and they disappeared from sight.

So Orostron waited, with what patience he could, while the storm rose around him and the light of the aurora grew ever brighter in the sky. At the agreed times he called the mother ship and received brief acknowledgments from Rugon. He wondered how Torkalee was faring, halfway round the planet, but he could not contact him through the crash and thunder of solar interference.

It did not take Klarten and the Hansurs long to discover that their theories were largely correct. The building was a radio station, and it was deserted. It consisted of one tremendous room with a few small offices leading from it. In the main chamber, row after row of electrical equipment stretched into the distance; lights flickered and winked on hundreds of control panels, and a dull glow came from the elements in a great avenue of vacuum tubes.

But Klarten was not impressed. The first radio sets his race had built were now fossilized in strata a thousand million years old. Man, who had possessed electrical machines for only few centuries. could not compete with those who had known them for half the lifetime of the Earth.

Nevertheless, the party kept their recorders running as they explored the building. There was still one problem to be solved. The deserted station was broadcasting programs—but where were they coming from? The central switchboard had been quickly located. It was designed to handle scores of programs simultaneously, but the source of those programs was lost in a maze of cables that vanished underground. Back in the *S9000*, Rugon was trying to analyze the broadcasts and perhaps his researches would reveal their origin. It was impossible to trace cables that might lead across continents.

The party wasted little time at the deserted station. There was nothing they could learn from it, and they were seeking

life rather than scientific information. A few minutes later the little ship rose swiftly from the plateau and headed towards the plains that must lie beyond the mountains. Less than three hours were still left to them.

As the array of enigmatic mirrors dropped out of sight, Orostron was struck by a sudden thought. Was it imagination, or had they all moved through a small angle while he had been waiting, as if they were still compensating for the rotation of the Earth? He could not be sure, and he dismissed the matter as unimportant. It would only mean that the directing mechanism was still working, after a fashion.

They discovered the city fifteen minutes later. It was a great, sprawling metropolis, built around a river that had disappeared leaving an ugly scar winding its way among the great buildings and beneath bridges that looked very incongruous now.

Even from the air, the city looked deserted. But only two and a half hours were left—there was no time for further exploration. Orostron made his decision, and landed near the largest structure he could see. It seemed reasonable to suppose that some creatures would have sought shelter in the strongest buildings, where they would be safe until the very end.

The deepest coves—the heart of the planet itself—would give no protection when the final cataclysm came. Even if this race had reached the outer planets, its doom would only be delayed by the few hours it would take for the ravening wavefronts to cross the Solar System.

Orostron could not know that the city had been deserted not for a few days or weeks, but for over a century. For the culture of cities, which had outlasted so many civilizations, had been doomed at last when the helicopter brought universal transportation. Within a few generations the great masses of mankind, knowing that they could reach any part of the globe in a matter of hours, had gone back to the fields and forests for which they had always longed. The new civilization had machines and resources of which earlier ages had never dreamed, but it was essentially rural and no longer bound to the steel and concrete warrens that had dominated the centuries before. Such cities that still remained were specialized centers of research, administration or entertainment; the others had been allowed to decay where it was too much trouble to destroy them. The dozen or so greatest of all cities, and the ancient university towns, had scarcely changed and would have lasted for many generations to come. But the cities that had been founded on steam and iron and surface transportation had passed with the industries that had nourished them.

And so while Orostron waited in the tender, his colleagues raced through endless empty corridors and deserted halls, taking innumerable photographs but learning nothing of the creatures who had used these buildings. There were libraries, meeting places, council rooms, thousands of offices—all were empty and deep with dust. If they had not seen the radio station on its mountain eyrie, the explorers could well have believed that this world had known no life for centuries.

Through the long minutes of waiting, Orostron tried to imagine where this race could have vanished. Perhaps they had killed themselves knowing that escape was impossible; perhaps they had built great shelters in the bowels of the planet, and even now were cowering in their millions beneath his feet, waiting for the end. He began to fear that he would never know.

It was almost a relief when at last he had to give the order for the return. Soon he would know if Torkalee's party had been more fortunate. And he was anxious to get back to the mother ship, for as the minutes passed the suspense had become more and more acute. There had always been the thought in his mind: "What if the astronomers of Kulath have made a mistake?" He would begin to feel happy when the walls of the *S9000* were around him. He would be happier still when they were out in space and this ominous sun was shrinking far astern.

As soon as his colleagues had entered the air lock, Orostron hurled his tiny machine into the sky and set the controls to home on the *S9000*. Then he turned to his friends.

"Well, what have you found?" he asked.

Klarten produced a large roll of canvas and spread it out on the floor.

"This is what they were like," he said quietly. "Bipeds, with only two arms. They seem to have managed well, in spite of that handicap. Only two eyes as well, unless there are others in the back. We were lucky to find this; it's about the only thing they left behind."

The ancient oil painting stared stonily back at the three creatures regarding it so intently. By the irony of fate, its complete worthlessness had saved it from oblivion. When the city had been evacuated, no

one had bothered to move Alderman John Richards, 1909-1974. For a century and a half he had been gathering dust while far away from the old cities the new civilization had been rising to heights no earlier culture had ever known.

"That was almost all we found," said Klarten. "The city must have been deserted for years. I'm afraid our expedition has been a failure. If there are any living beings on this world, they've hidden themselves too well for us to find them."

His commander was forced to agree.

"It was an almost impossible task," he said. "If we'd had weeks instead of hours we might have succeeded. For all we know, they may even have built shelters under the sea. No one seems to have thought of that."

He glanced quickly at the indicators and corrected the course.

"We'll be there in five minutes. Alveron seems to be moving rather quickly. I wonder if Torkalee has found anything?"

The *S9000* was hanging a few miles above the seaboard of a blazing continent when Orostron homed upon it. The danger line was thirty minutes away and there was no time to lose. Skillfully, he maneuvered the little ship into its launching tube and the party stepped out of the air lock.

There was a small crowd waiting for them. That was to be expected, but Orostron could see at once that something more than curiosity had brought his friends here. Even before a word was spoken, he knew that something was wrong.

"Torkalee hasn't returned. He's lost his party and we're going to the rescue. Come along to the control room at once."

From the beginning, Torkalee had been luckier than Orostron. He had followed the zone of twilight, keeping away from the intolerable glare of the sun, until he came to the shores of an inland sea. It was a very recent sea, one of the latest of Man's works, for the land it covered had been desert less than a century before. In a few hours it would be desert again, for the water was boiling and clouds of steam were rising to the skies. But they could not veil the loveliness of the great white city that overlooked the tideless sea.

Flying machines were still parked neatly round the square in which Torkalee landed. They were disappointingly primitive, though beautifully finished, and depended on rotating airfoils for support. Nowhere was there any sign of life, but the place gave the impression that its inhabitants were not very far away. Lights were still shining from some of the windows.

Torkalee's three companions lost no time in leaving the machine. Leader of the party, by seniority of rank and race was T'sinadree, who like Alveron himself had been born on one of the ancient planets of the Central Suns. Next came Alarkane, from a race which was one of the youngest in the Universe and took a perverse pride in the fact. Last came one of the strange beings from the system of Palador. It was nameless, like all its kind, for it possessed no identity of its own, being merely a mobile but still dependent cell in the consciousness of its race. Though it and its fellows had long been scattered over the Galaxy in the exploration of countless worlds, some unknown link still bound them together as inexorably as the living cells in a human body.

When a creature of Palador spoke, the pronoun it used was always "We." There was not, nor could ever be, any first person singular in the language of Palador.

The great doors of the splendid building baffled the explorers, though any human child would have known their secret. T'sinadree wasted no time on them but called Torkalee on his personal transmitter. Then the three hurried aside while their commander maneuvred his machine into the best position. There was a brief burst of intolerable flame; the massive steelwork flickered once at the edge of the visible spectrum and was gone. The stones were still glowing when the eager party hurried into the building, the beams of their light projectors fanning before them.

The torches were not needed. Before them lay a great hall, glowing with light from lines of tubes along the ceiling. On either side, the hall opened out into long corridors, while straight ahead a massive stairway swept majestically towards the upper floors.

For a moment T'sinadree hesitated. Then, since one way was as good as another, he led his companions down the first corridor.

The feeling that life was near had now become very strong. At any moment, it seemed, they might be confronted by the creatures of this world. If they showed hostility—and they could scarcely be blamed if they did—the paralyzers would be used at once.

The tension was very great as the party entered the first room, and only relaxed when they saw that it held nothing but

machines—row after row of them, now stilled and silent. Lining the enormous room were thousands of metal filing cabinets, forming a continuous wall as far as the eye could reach. And that was all; there was no furniture, nothing but the cabinets and the mysterious machines.

Alarkane, always the quickest of the three, was already examining the cabinets. Each held many thousand sheets of tough, thin material, perforated with innumerable holes and slots. The Paladorian appropriated one of the cards and Alarkane recorded the scene together with some close-ups of the machines. Then they left. The great room, which had been one of the marvels of the world, meant nothing to them. No living eye would ever again see that wonderful battery of almost human Hollerith analyzers and the five thousand million punched cards holding all that could be recorded of each man, woman and child on the planet.

It was clear that this building had been used very recently. With growing excitement, the explorers hurried on to the next room. This they found to be an enormous library, for millions of books lay all around them on miles and miles of shelving. Here, though the explorers could not know it, were the records of all the laws that Man had ever passed, and all the speeches that had ever been made in his council chambers.

T'sinadree was deciding his plan of action when Alarkane drew his attention to one of the racks a hundred yards away. It was half empty, unlike all the others. Around it books lay in a tumbled heap on the floor, as if knocked down by someone in frantic haste. The signs were unmistakable. Not long ago, other creatures had been this way. Faint wheel marks were clearly visible on the floor to the acute sense of Alarkane, though the others could see nothing. Alarkane could even detect footprints, but knowing nothing of the creatures that had formed them he could not say which way they led.

The sense of nearness was stronger than ever now, but it was nearness in time, not in space. Alarkane voiced the thoughts of the party.

"Those books must have been valuable, and someone has come to rescue them—rather as an after thought, I should say. That means there must be a place of refuge, possibly not very far away. Perhaps we may be able to find some other clues that will lead us to it."

T'sinadree agreed, but the Paladorian refused to be enthusiastic.

"That may be so," it said, "but the refuge may be anywhere on the planet, and we have just two hours left. Let us waste no more time if we hope to rescue these people."

The party hurried forward once more, pausing only to collect a few books that might be useful to the scientists at Base—though it was doubtful if they could ever be translated. They soon found that the great building was composed largely of small rooms, all showing signs of recent occupation. Most of them were in a neat and tidy condition, but one or two were very much the reverse. The explorers were particularly puzzled by one room—clearly an office of some kind—that appeared to have been completely wrecked. The floor was littered with papers, the furniture had been smashed, and smoke was pouring through the broken windows from the fires outside.

T'sinadree was rather alarmed.

"Surely no dangerous animal could have got into a place like this!" he exclaimed, fingering his paralyzer nervously.

Alarkane did not answer. He began to make that annoying sound which his race called "laughter." It was several minutes before he would explain what had amused him.

"I don't think any animal has done it," he said. "In fact, the explanation is very simple. Suppose you had been working all your life in this room, dealing with endless papers, year after year. And suddenly, you are told that you will never see it again, that your work is finished, and that you can leave it forever. More than that—no one will come after you. *Everything* is finished. How would you make your exit, T'sinadree?"

The other thought for a moment.

"Well, I suppose I'd just tidy things up and leave. That's what seems to have happened in all the other rooms."

Alarkane laughed again.

"I'm quite sure you would. But some individuals have a different psychology. I think I should have liked the creature that used this room."

He did not explain himself further, and his two colleagues puzzled over his words for quite a while before they gave it up.

It came as something of a shock when Torkalee gave the order to return. They had gathered a great deal of information, but had found no clue that might lead them to the missing inhabitants of this world. That problem was as baffling as ever, and now it seemed that it would never be solved. There were only forty

minutes left before the *S9000* would be departing.

They were halfway back to the tender when they saw the semi-circular passage leading down into the depths of the building. Its architectural style was quite different from that used elsewhere, and the gently sloping floor was an irresistible attraction to creatures whose many legs had grown weary of the marble staircases which only bipeds could have built in such profusion. T'sinadree had been the worst sufferer, for he normally employed twelve legs and could use twenty when he was in a hurry—though no one had ever seen him perform this feat.

The party stopped dead and looked down the passageway with a single thought. *A tunnel, leading down into the depths of the earth.* At its end, they might yet find people of this world and rescue some of them from their fate. For there was still time to call the mother ship if the need arose.

T'sinadree signaled to his commander and Torkalee brought the little machine immediately overhead. There might not be time for the party to retrace its footsteps through the maze of passages, so meticulously recorded in the Paladorian mind that there was no possibility of going astray. If speed were necessary. Torkalee could blast his way through the dozen floors above their head. In any case, it should not take long to find what lay at the end of the passage.

It took only thirty seconds. The tunnel ended quite abruptly in a very curios cylindrical room with magnificently padded seats along the walls. There was no way out save that by which they had come and it was several seconds before the purpose of the chamber dawned on Alarkane's mind. It was a pity, he thought, that they would never have time to use this. The thought was suddenly interrupted by a cry from T'sinadree. Alarkane wheeled around, and saw that the entrance had closed silently behind them.

Even in that first moment of panic, Alarkane found himself thinking with some admiration: "Whoever they were, they knew how to build automatic machinery!"

The Paladorian was the first to speak. It waved one of its tendrils towards the seats.

"We think it would be best to be seated," it said. The multiplex mind of Palador had already analyzed the situation and knew what was coming.

They did not have long to wait before a low-pitched hum came from a grille overhead, and for the very last time in history a human, even if lifeless, voice was heard on Earth. The words were meaningless, though the trapped explorers could guess their message clearly enough.

"Choose your stations, please, and be seated."

Simultaneously, a wall panel at one end of the compartment glowed with light. On it was a simple map, consisting of a series of a dozen circles connected by a line. Each of the circles had writing alongside it, and beside the writing were two buttons of different colors.

Alarkane looked questioningly at his leader.

"Don't touch them," said T'sinadree. "If we leave the controls, alone, the doors may open again."

He was wrong. The engineers who had designed the automatic subway had assumed that anyone who entered it would naturally wish to go somewhere. If they selected no intermediate station, their destination could only be the end of the line.

There was another pause while the relays and thyratons waited for their orders. In those thirty seconds, if they had known what to do, the party could have opened the doors and left the subway. But they did not know, and the machines geared to a human psychology acted for them.

The surge of acceleration was not very great; the lavish upholstery was a luxury, not a necessity. Only an almost imperceptible vibration told of the speed at which they were traveling through the bowels of the earth, on a journey the duration of which they could not even guess, And in thirty minutes, the *S9000* would be leaving the Solar System.

There was a long silence in the speeding machine. T'sinadree and Alarkane were thinking rapidly. So was the Paladorian, though in a different fashion. The conception of personal death was meaningless to it, for the destruction of a single unit meant no more to the group-mind than the loss of a nail-paring to a man. But it could, though with great difficulty, appreciate the plight of individual intelligences such as Alarkane and T'sinadree, and it was anxious to help them if it could.

Alarkane had managed to contact Torkalee with his personal transmitter, though the signal was very weak and seemed to be fading quickly. Rapidly he explained the situation, and almost at once the signals became clearer. Torkalee

was following the path of the machine, flying above the ground under which they were speeding to their unknown destination. That was the first indication they had of the fact that they were traveling at nearly a thousand miles an hour, and very soon after that Torkalee was able to give the still more disturbing news that they were rapidly approaching the sea. While they were beneath the land, there was hope, though a slender one, that they might stop the machine and escape. But under the ocean—not all the brains and the machinery in the great mother ship could save them. No one could have devised a more perfect trap.

T'sinadree had been examining the wall map with great attention. Its meaning was obvious, and along the line connecting the circles a tiny spot of light was crawling. It was already halfway to the first of the stations marked.

"I'm going to press one of those buttons," said T'sinadress at last. "It won't do any harm, and we may learn something."

"I agree. Which will you try first?"

"There are only two kinds, and it won't matter if we try the wrong one first. I suppose one is to start the machine and the other is to stop it."

Alarkane was not very hopeful.

"It started without any button pressing," he said. "I think it's completely automatic and we can't control it from here at all."

T'sinadree could not agree.

"These buttons are clearly associated with the stations, and there's no point in having them unless you can use them to stop yourself. The only question is, which is the right one?"

His analysis was perfectly correct. The machine could be stopped at any intermediate station. They had only been on their way ten minutes, and if they could leave now, no harm would have been done. It was just bad luck that T'sinadree's first choice was the wrong button.

The little light on the map crawled slowly through the illuminated circle without checking its speed. And at the same time Torkalee called from the ship overhead.

"You have just passed underneath a city and are heading out to sea. There cannot be another stop for nearly a thousand miles."

Alveron had given up all hope of finding life on this world. The *S9000* had roamed over half the planet, never staying long in one place, descending ever and again in an effort to attract attention. There had been no response; Earth seemed utterly dead. If any of its inhabitants were still alive, thought Alveron, they must have hidden themselves in its depths where no help could reach them, though their doom would be none the less certain.

Rugon brought news of the disaster. The great ship ceased its fruitless searching and fled back through the storm to the ocean above which Torkalee's little tender was still following the track of the buried machine.

The scene was truly terrifying. Not since the days when Earth was born had there been such seas as this. Mountains of water were racing before the storm which had now reached velocities of many hundred miles an hour. Even at this distance from the mainland the air was full of flying debris—trees, fragments of houses, sheets of metal, anything that had not been anchored to the ground. No airborne machine could have lived for a moment in such a gale. And ever and again even the roar of the wind was drowned as the vast water-mountains met head-on with a crash that seemed to shake the sky.

Fortunately, there had been no serious earthquakes yet. Far beneath the bed of the ocean, the wonderful piece of engineering which had been the world president's private vacuum-subway was still working perfectly, unaffected by the tumult and destruction above. It would continue to work until the last minute of the Earth's existence, which, if the astronomers were right, was not much more than fifteen minutes away—though precisely how much more, Alveron would have given a great deal to know. It would be nearly an hour before the trapped party could reach land and even the slightest hope of rescue.

Alveron's instructions had been precise, though even without them he would never have dreamed of taking any risks with the great machine that had been intrusted to his care. Had he been human, the decision to abandon the trapped members of his crew would have been desperately hard to make. But he came of a race far more sensitive than Man, a race that so loved the things of the spirit that long ago, and with infinite reluctance, it had taken over control of the Universe since only thus could it be sure that justice was being done. Alveron would need all his superhuman gifts to carry him through the next few hours.

Meanwhile, a mile below the bed of the ocean Alarkane and T'sinadree were very

busy indeed with their private communicators. Fifteen minutes is not a long time in which to wind up the affairs of a lifetime. It is indeed, scarcely long enough to dictate more than a few of those farewell messages which at such moments are so much more important than all other matters.

All the while the Paladorian had remained silent and motionless, saying not a word. The other two, resigned to their fate and engrossed in their personal affairs, had given it no thought. They were startled when suddenly it began to address them in its peculiarly passionless voice.

"We perceive that you are making certain arrangements concerning your anticipated destruction. That will probably be unnecessary. Captain Alveron hopes to rescue us if we can stop this machine when we reach land again."

Both T'sinadree and Alarkane were too surprised to say anything for a moment. Then the latter gasped, "How do you know?"

It was a foolish question for he remembered at once that there were several Paladorians—if one could use the phrase—in the *S9000,* and consequently their companion knew everything that was happening in the mother ship. So he did not wait for an answer but continued: "Alveron can't do that! He daren't take such a risk!"

"There will be no risk," said the Paladorian. "We have told him what to do. It is really very simple."

Alarkane and T'sinadree looked at their companion with something approaching awe, realizing now what must have happened. In moments of crisis, the single units comprising the Paladorian mind could link together in an organization no less close than that of any physical brain. At such moments they formed an intellect more powerful than any other in the Universe. All ordinary problems could be solved by a few hundred or thousand units. Very rarely millions would be needed, and on two historic occasions the billions of cells of the entire Paladorian consciousness had been welded together to deal with emergencies that threatened the race. The mind of Palador was one of the greatest mental resources of the Universe; it's full force was seldom required, but the knowledge that it was available was supremely comforting to other races. Alarkane wondered how many cells had co-ordinated to deal with this particular emergency. He also wondered how so trivial an incident had ever come to its attention at all.

To that question he was never to know the answer, though he might have guessed it had he known that the chillingly remote Paladorian mind possessed an almost human streak of vanity. Long ago, Alarkane had written a book trying to prove that eventually all intelligent races would sacrifice individual consciousness and that one day only group-minds would remain in the Universe. Palador, he had said, was the first of those ultimate intellects, and the vast, dispersed mind had not been displeased.

They had no time to ask any further questions before Alveron himself began to speak through their communicators.

"Alveron calling! We're staying on this planet until the detonation wave reaches it, so we may be able to rescue you. You're heading towards a city on the coast which you'll reach in forty minutes at your present speed. If you cannot stop yourselves then, we're going to blast the tunnel behind and ahead of you to cut off your power. Then we'll sink a shaft to get you out—the chief engineer says he can do it in five minutes with the main projectors. So you should be safe within an hour, unless the sun blows up before."

"And if that happens, you'll be destroyed as well! You mustn't take such a risk!"

"Don't let that worry you; we're perfectly safe. When the sun detonates, the explosion wave will take several minutes to rise to its maximum. But apart from that, we're on the night side of the planet, behind an eight-thousand-mile screen of rock. When the first warning of the explosion comes, we will accelerate out of the Solar System, keeping in the shadow of the planet. Under our maximum drive, we will reach the velocity of light before leaving the cone of shadow, and the sun cannot harm us then."

T'sinadree was still afraid to hope. Another objection came at once into his mind.

"Yes, but how will you get any warning, here on the night side of the planet?"

"Very easily," replied Alverson. This world has a moon which is now visible from this hemisphere. We have telescopes trained on it. If it shows any sudden increase in brilliance, our main drive goes on automatically and we'll be thrown out of the system."

The logic was flawless. Alveron, cautious as ever, was taking no chances. It would be many minutes before the eight-thousand-mile shield of rock and

metal could be destroyed by the fires of the exploding sun. In that time, the *S9000* could have reached the safety of the velocity of light.

Alarkane pressed the second button when they were still several miles from the coast. He did not expect anything to happen then, assuming that the machine could not stop between stations. It seemed too good to be true when, a few minutes later, the machine's slight vibration died away and they came to a halt.

The doors slid silently apart. Even before they were fully open, the three had left the compartment. They were taking no more chances. Before them a long tunnel stretched into the distance rising slowly out of sight. They were starting along it when suddenly Alveron's voice called from the communicators.

"Stay where you are! We're going to blast!"

The ground shuddered once, and far ahead there came the rumble of falling rock. Again the earth shook—and a hundred yards ahead the passageway vanished abruptly. A tremendous vertical shaft had been cut clean through it.

The party hurried forward again until they came to the end of the corridor and stood waiting on its lip. The shaft in which it ended was a full thousand feet across and descended into the earth as far as the torches could throw their beams. Overhead, the storm clouds fled beneath a moon that no man would have recognized, so luridly brilliant was its disk. And, most glorious of all sights, the *S9000* floated high above, the great projectors that had drilled this enormous pit still glowing cherry red.

A dark shape detached itself from the mother ship and dropped swiftly towards the ground. Torkalee was returning to collect his friends. A little later, Alveron greeted them in the control room. He waved to the great vision screen and said quietly:

"You see, we were only just in time."

The continent below them was slowly settling beneath the mile-high waves that were attacking its coasts. The last that anyone was ever to see of Earth was a great plain, bathed with the silver light of the abnormally brilliant moon. Across its face the waters were pouring in a glittering flood towards a distant range of mountains. The sea had won its final victory, but its triumph would be short-lived for soon sea and land would be no more. Even as the silent party in the control room watched the destruction below, the infinitely greater catastrophe to which this was only the prelude came swiftly upon them.

It was as though dawn had broken suddenly over this moonlit landscape. But it was not dawn: it was only the moon, shining with the brilliance of a second sun. For perhaps thirty seconds that awesome, unnatural light burnt fiercely on the doomed land beneath. Then there came a sudden flashing of indicator lights across the control board. The main drive was on. For a second Alveron glanced at the indicators and checked their information. When he looked again at the screen, Earth was already gone.

The magnificent, desperately overstrained generators quietly died when the *S9000* was passing the orbit of Persephone. It did not matter, the sun could never harm them now, and although the ship was speeding helplessly out into the lonely night of interstellar space, it would only be a matter of days before rescue came.

There was irony in that. A day ago, they had been the rescuers, going to the aid of a race that now no longer existed. Not for the first time Alveron wondered about the world that had just perished. He tried, in vain, to picture it as it had been in its glory, the streets of its cities thronged with life. Primitive though its people had been, they might have offered much to the Universe later in history. If only they could have made contact! Regret was useless: long before their coming, the people of this world must have buried themselves in its iron heart. And now they and their civilization would remain a mystery for the rest of time.

Alveron was glad when his thoughts were interrupted by Rugon's entrance. The chief of communications had been very busy ever since the take-off, trying to analyze the programs radiated by the transmitter Orostron had discovered. The problem was not a difficult one, but it demanded the construction of special equipment, and that had taken time.

"Well, what have you found?" asked Alveron.

"Quite a lot," replied his friend. "There's something mysterious here, and I don't understand it.

"It didn't take long to find how the vision transmissions were built up, and we've been able to convert them to suit our own equipment. It seems that there were cameras all over the planet, surveying points of interest. Some of them were apparently in cities, on the tops of very high buildings. The cameras were rotat-

ing continuously to give panoramic views. In the programs we've recorded there are about twenty different scenes.

In addition, there are a number of transmissions of a different kind, neither sound nor vision. They seem to be purely scientific—possibly instrument readings or something of that sort. All these programs were going out simultaneously on different frequency bands.

"Now there must be a reason for all this. Orostron still thinks that the station simply wasn't switched off when it was deserted. But these aren't the sort of programs such a station would normally radiate at all. It was certainly used for interplanetary relaying—Klarten was quite right there. So these people must have crossed space, since none of the other planets had any life at the time of the last survey. Don't you agree?"

Alveron was following intently.

"Yes, that seems reasonable enough. But it's also certain that the beam was pointing to none of the other planets. I checked that myself."

"I know," said Rugon. "What I want to discover is why a giant interplanetary relay station is busily transmitting pictures of a world about to be destroyed—*pictures that would be of immense interest to scientists and astronomers.* Someone had gone to a lot of trouble to arrange all those panoramic cameras. I am convinced that those beams were going *somewhere.*"

Alveron started up.

"Do you imagine that there might be an outer planet that hasn't been reported?" he asked. "If so, your theory's certainly wrong. The beam wasn't even pointing in the plane of the Solar System. And even if it were—just look at this."

He switched on the vision screen and adjusted the controls. Against the velvet curtain of space was hanging a blue-white sphere, apparently composed of many concentric shells of incandescent gas. Even though its immense distance made all movement invisible, it was clearly expanding at an enormous rate. At its center was a blinding point of light—the white dwarf star that the sun had now become.

"You probably don't realize just how big that sphere is," said Alveron. "Look at this."

He increased the magnification until only the center portion of the nova was visible. Close to its heart were two minute condensations, one on either side of the nucleus.

"Those are the two giant planets of the system. They have still managed to retain their existence—after a fashion. And they were several hundred million miles from the sun.

"The nova is still expanding—but it's already twice the size of the Solar System."

Rugon was silent for a moment.

"Perhaps you're right," he said, rather grudgingly. "You've disposed of my first theory. But you still haven't satisfied me."

He made several swift circuits of the room before speaking again. Alveron waited patiently, he knew the almost intuitive powers of his friend, who could often solve a problem when mere logic seemed insufficient.

Then, rather slowly, Rugon began to speak again.

"What do you think of this?" he said. "Suppose we've completely underestimated this people? Orostron did it once—he thought they could never have crossed space, since they'd only known radio for two centuries. Hansur II. told me that. Well. Orostron was quite wrong. Perhaps we're all wrong. I've had a look at the material that Klarten brought back from the transmitter. He wasn't impressed by what he found, but it's a marvelous achievement for so short a time. There were devices in that station that belonged to civilizations thousands of years older. *Alveron, can we follow that beam to see where it leads?*"

Alveron said nothing for a full minute. He had been more than half expecting the question, but it was not an easy one to answer. The main generators had gone completely. There was no point in trying to repair them. But there was still power available, and while there was power anything could be done in time. It would mean a lot of improvisation, and some difficult maneuvers, for the ship still had its enormous initial velocity. Yes, it could be done, and the activity would keep the crew from becoming further depressed, now that the reaction caused by the mission's failure had started to set in. The news that the nearest heavy repair ship could not reach them for three weeks had also caused a slump in morale.

The engineers, as usual, made a tremendous fuss. Again as usual, they did the job in half the time they had dismissed as being absolutely impossible. Very slowly, over many hours, the great ship began to discard the speed its main drive had given it in as many minutes. In a tremendous curve, millions of miles in radius, the *S9000* changed its course and the star fields shifted round it.

The maneuver took three days, but at

the end of that time the ship was limping along a course parallel to the beam that had once come from Earth. They were heading out into emptiness, the blazing sphere that had been the sun dwindling slowly behind them. By the standards of interstellar flight, they were almost stationary.

For hours Rugon strained over his instruments, driving his detector beams far ahead into space. There were certainly no planets within many light-years; there was no doubt of that. From time to time Alveron came to see him and always he had to give the same reply: "Nothing to report." About a fifth of the time Rugon's intuition let him down badly; he began to wonder if this were such an occasion.

Not until a week later did the needles of the mass-detectors quiver feebly at the ends of their scales. But Rugon said nothing, not even to his captain. He waited until he was sure, and he went on waiting until even the short-range scanners began to react, and to build up the first faint pictures on the vision screen. Still he waited patiently until he could interpret the images. Then, when he knew that his wildest fancy was even less than the truth, he called his colleagues into the control room.

The picture on the vision screen was the familiar one of endless star fields, sun beyond sun to the very limits of the Universe. Near the center of the screen a distant nebula made a patch of haze that was difficult for the eye to grasp.

Rugon increased the magnification. The stars flowed out of the field; the little nebula expanded until it filled the screen and then—it was a nebula no longer. A simultaneous gasp of amazement came from all the company at the sight that lay before them.

Lying across league after league of space, ranged in a vast three dimensional array of rows and columns with the precision of a marching army, were thousands of tiny pencils of light. They were moving swiftly; the whole immense lattice holding its shape as a single unit. Even as Alveron and his comrades watched, the formation began to drift off the screen and Rugon had to recenter the controls.

After a long pause, Rugon started to speak.

"This is the race," he said softly, "That has only known radio for two centuries —the race that we believed had crept to die in the heart of its planet. I have examined those images under the highest possible magnification.

"That is the greatest fleet of which there has even been a record. Each of those points of light represents a ship larger than our own. Of course, they are very primitive—what you see on the screen are the jets of their rockets. Yes, they dared to use rockets to bridge interstellar space! You realize what that means. It would take them centuries to reach the nearest star. The whole race must have embarked on this journey in the hope that its descendants would complete it, generations later.

"To measure the extent of their accomplishment, think of the ages it took us to conquer space, and the longer ages still before we attempted to reach the stars. Even if we were threatened with annihilation, could we have done so much in so short a time? Remember, this is the youngest civilization in the Universe. Four hundred thousand years ago it did not even exist. What will it be a million years from now?"

An hour later, Orostron left the crippled mother ship to make contact with the great fleet ahead. As the little torpedo disappeared among the stars, Alveron turned to his friend and made a remark that Rugon was often to remember in the years ahead.

"I wonder what they'll be like?" he mused. "Will they be nothing but wonderful engineers, with no art or philosophy? They're going to have such a surprise when Orostron reaches them—I expect it will be rather a blow to their pride. It's funny how all isolated races think they're the only people in the Universe. But they should be grateful to us—we're going to save them a good many hundred years of travel."

Alveron glanced at the Milky Way, lying like a veil of silver mist across the vision screen. He waved towards it with a sweep of a tentacle that embraced the whole circle of the Galaxy, from the Central Planets to the lonely suns of the Rim.

"You know," he said to Rugon, "I feel rather afraid of these people. Suppose they don't like our little Federation?" He waved once more toward the star-clouds that lay massed across the screen, glowing with the light of their countless suns.

"Something tells me they'll be very determined people," he added. "We had better be polite to them. After all, we only outnumber them about a thousand million to one."

Rugon laughed at his captain's little joke.

Twenty years afterwards, the remark didn't seem so funny.

A Son Is Born

By A. E. VAN VOGT

Van Vogt starts a new series, of a world where atomic energy is old—and science forgotten, debased to ritual. A world into which a child touched by atomic rays is born—

JUNIOR scientists stood at the bell ropes all day, ready to sound forth the tidings of an important birth. By night time, they were exchanging coarse jests as to the possible reason for the delay. They took care, however, not to be overhead by seniors or initiates.

The expected child had actually been born a few hours after dawn. He was a weak and sickly fellow, and he showed certain characteristics that brought immediate dismay to the Leader household. His mother, Lady Tania, when she wakened, listened for a while to his piteous crying, then commented acidly:

"Who frightened the little wretch? He seems already afraid of life."

Scientist Joquin, in charge of the delivery, considered her words an ill-omen. He had not intended to let her see the monstrosity until the following day, but now it seemed to him that he must act swiftly to avert calamity. He hurriedly sent a dozen slave women to wheel in the carriage, ordering them to group around it in close formation to ward off any malignant radiation that might be in the bedroom.

Lady Tania was lying, her slim body propped up in bed, when the astonishing procession started to squeeze through the door. She watched it with a frown of amazement and then the beginning of alarm. She had patiently borne her husband three other children, and so she knew that what she was seeing was not part of any normal observance. She was not a soft spoken creature, and even the presence of a Scientist in the room did not restrain her. She said violently:

"What is going on here, Joquin?"

Joquin fluttered his head at her in distress. Did she not realize that every ill-tempered word spoken at this period only doomed the handicapped child to further disasters? He noted, startled, that she was parting her lips to speak again—and, with a silent prayer to the atom gods, he took his life in his hands.

Three swift strides he made towards the bed, and clapped his palm over her mouth. As he had expected, the woman was too astounded by the action to utter a sound. By the time she recovered, and began to struggle weakly, the carriage was being tilted. And over his arm, she had her first glimpse of the baby.

The gathering storm faded from her blue eyes. After a moment, Joquin gently removed his hand from her mouth, and slowly retreated beyond the carriage. He stood there, quailing with the thought of what he had done, but gradually as no verbal lightning struck at him from the bed, his sense of righteousness reasserted. He began to glow inwardly and ever afterwards claimed that what he had done saved the situation as far as it could be saved. In the warmth of that self-congratulatory feeling, he almost forgot the child.

He was recalled by the Lady Tania saying in a dangerously quiet tone:

"How did it happen?"

Joquin nearly made the mistake of shrugging. He caught himself in time, but before he could say anything, the woman said, more sharply:

"Of course, I know it's due to the atom gods. But *when* do you think it happened?"

Joquin was cautious. The scientists of the temples had had much experience with atomic mutation, enough to know that the controlling gods were erratic and not easily pinned down by dates. Nevertheless, mutation did not occur after an embryo baby was past the fish stage, and therefore a time limit could be estimated. Not after January, 470 A.B., and not before— He paused, recalling the approximate birth date of the Lady Tania's third child. He completed his figuring aloud—"Not before 467 A.B."

The woman was looking at the child now, more intently. What she saw made her swallow visibly. Joquin, watching her, thought he knew what she was thinking. She had made the mistake a few days before her confinement of boasting in a small company that four children would give her an advantage over her sister, Chrosone, who only had two children, and over her stepbrother, Lord Tews, whose acid-tongued wife had borne him three children. Now, the advantage would be theirs, for, obviously, she could have no more normal children, and they could overtake or surpass her at their leisure.

There would also be many witty exchanges at her expense. The potentialities for personal embarrassment were actually almost endless.

All that, Joquin read in her face, as she stared with hardening eyes at the child. He said hurriedly:

"This is the worst stage, Lady. Frequently, the result after a few months or years is reasonably—satisfactory."

He had almost said "human." He was aware of her gaze swinging towards him. He waited uneasily, but all she said finally was:

"Has the Lord Leader, the child's grandfather, been in?"

Joquin inclined his head. "The Lord Leader saw the baby a few minutes after it was born. His only comment was to the effect that I should ascertain from you, if possible, when you were affected."

She did not reply immediately, but her eyes narrowed even more. Her thin face grew hard, then harsh. She looked up at the scientist at last.

"I suppose you know," she said, "that only negligence at one of the temples could be responsible."

Joquin had already thought of that, but now he looked at her uneasily. Nothing had ever been done about previous "children of the gods," but it had been growing on him that the Linns at least regarded this as a special case. He said slowly:

"The atom gods are inscrutable."

The woman seemed not to hear. Her cold voice went on:

"The child will have to be destroyed, I suppose. But you may be sure that, within a month, there will be a compensatory stretching of scientific necks such as the world has not seen in a generation."

She was not a pleasant person when roused, the Lady Tania Linn, daughter-in-law of the Lord Leader.

It proved easy to trace the source of the mutation. The previous summer, Tania, tiring of a holiday on one of the family's west coast estates, returned to the capitol before she was expected. Her husband, General of the Realm Creg Linn, was having extensive alterations made to the Hill Palace. No invitation was forthcoming from her sister at the other end of the city, or from her stepmother-in-law, the wife of the Lord Leader. Tania, perforce, moved into an apartment in the Town Palace.

This assortment of buildings, though still maintained by the state, had not been used as a residence for several years. The city had grown immense since it was built, and long since the commercial houses had crowded around it. Due to a lack of foresight, by an earlier generation, title had not been taken to the lands surrounding the palace, and it had always been deemed unwise to seize them by force.

There was one particularly annoying aspect of the failure to realize the profitable potentialities of the area. This was the scientists' temple that towered in the shelter of one wing of the palace. It had caused the Lady Tania no end of heartache the previous summer. On taking up residence, she discovered that the only habitable apartment was on the temple side, and that the three most gorgeous windows faced directly onto the blank lead walls of the temple.

The scientist who had built the temple was a member of the Raheinl group, hostile to the Linns. It had titillated the whole city when the site was made known. The fact that three acres of grounds were available made the affront obvious.

It still rankled.

The agents of the Lord Leader discovered at the first investigation that one small area of the lead wall of the temple was radioactive. They were unable to determine the reason for the activity, because the wall at that point was of the required thickness. But the fact was what they reported to their master. Before midnight of the second day after the child was born, the decision was in the making.

Shortly before twelve, Scientist Joquin was called in, and told the trend of events. Once more he took his life in his hands.

"Leader," he said, addressing the great man direct, "this is a grave error into which your natural irritation is directing you. The scientists are a group, who, having full control of atomic energy

dispensation, have developed an independent attitude of mind, which will not take kindly to punishments for accidental crimes. My advice is, leave the boy alive, and consult with the Scientists' Council. I will advise them to remove the temple of their own volition, and I feel sure they will agree."

Having spoken, Joquin glanced at the faces before him. And realized that he had made a mistake in his initial assumption. There were two men and three women in the room. The men were the grave, lean Lord Leader and the plumpish Lord Tews, who was the Lady Leader's eldest son by her first marriage. Lord Tews was acting General of the Realm in the absence of Lord Creg, Tania's husband, who was away fighting the Venusians on Venus.

The women present were the Lady Leader Linn, wife of the Lord Leader, and stepmother-in-law to the two other women, Chrosone, Tania's sister and Lady Tania still in bed. The Lady Tania and her sister were not on speaking terms, for a reason that need not be gone into here.

Joquin assumed that these five had called him for consultation, as they had on past occasions. Now, looking at them, realization came that their interest in him was psychological rather than logical. They listened intently to his words, but what he said apparently merely confirmed their previously held opinion.

Lord Tews looked at his mother, a faint smile on his plumpish face. She half lowered her eyelids. The two sisters remained frozen faced, staring at Joquin. The Lord Leader ended the tension by nodding a dismissal to the scientist.

Joquin went out, quivering. The wild idea came, to send a warning to the endangered temple scientists. But he quickly abandoned that as hopeless. No message from him would be allowed out of the palace.

He retired finally, but he was unable to sleep. In the morning, the fearful rescript that he had visualized all through the night was posted on the military board, for all to read. Joquin blinked at it palely. It was simple and without qualification.

It commanded that every scientist of the Raheinl temple was to be hanged before dusk. The property was ordered seized, and the buildings razed to the ground. The three acres of temple land were to be converted into a park.

It did not say that the park was to be added to the Town Palace of the Linns, though this later turned out to be the fact.

The rescript was signed in the firm hand of the Lord Leader himself.

Reading it, Joquin recognized that a declaration of war had been made against the power of the temple scientists.

The Scientist Alden was not a man who had premonitions. And certainly he had none as he walked slowly along towards the Raheinl temple.

The morning glowed around him. The sun was out. A gentle breeze blew along the avenue of palms which stalked in stately fashion past his new home. In his mind was the usual cozy kaleidoscope of happy reminiscences, and a quiet joy that a simple country scientist had in only ten years become the chief scientist of the Raheinl temple.

There was but one tiny flaw in that memory, and that was the real reason for his swift promotions. More than eleven years ago, he had remarked to another junior that, since the gods of the atom had yielded certain secrets of mechanical power to human beings, it might be worthwhile to cajole them by experimental methods into revealing others. And that, after all, there might be a grain of truth in the vague legends about cities and planets ablaze with atomic power and light.

Alden shuddered involuntarily at the brief remembrance. It was only gradually that he realized the extent of his blasphemy. And when the other junior coolly informed him the following day that he had told the chief scientist—that had seemed like the end of all his hopes.

Surprisingly, it turned out to be the beginning of a new phase in his career. Within a month he was called for his first private conversation with a visiting scientist, Joquin, who lived in the palace of the Linns.

"It is our policy," Joquin said, "to encourage young men whose thoughts do not move entirely in a groove. We know that radical ideas are common to young people, and that, as a man grows older, he attains a balance between his inward self and the requirements of the world.

"In other words," the scientist finished, smiling at the junior, "have your thoughts but keep them to yourself."

It was shortly after this that Alden was posted to the east coast. From there, a year later, he went to the capital. As he grew older, and gained power, he discovered that radicalism among the young men was much rarer than Joquin had implied.

The years of ascendancy brought awareness of the foolishness of what he had said. At the same time, he felt a certain pride in the words, a feeling that they made him "different" from, and so superior to, the other scientists.

As chief he discovered that radicalism was the sole yardstick by which his superiors judged a candidate for promotion. Only those recommendations which included an account of unusual thinking on the part of the aspirant, however slight the variance from the norm, were ever acted upon. The limitation had one happy effect. In the beginning, his wife, anxious to be the power behind the power at the temple, declared herself the sole arbiter as who would be urged for promotion. The young temple poets visited her when Alden was not around, and read their songs to her privately.

And then they discovered that her promises meant nothing. Their visits ceased. Alden had peace in his home, and a wife suddenly become considerably more affectionate.

His reverie ended. There was a crowd ahead, and cries. He saw that people were swarming around the Raheinl temple. Alden thought blankly, "An accident?"

He hurried forward pushing through the outer fringes of the throng. Anger came at the way individuals resisted his advance. Didn't they realize that he was a chief scientist? He saw mounted palace guardsmen urging their horses along the edge of the crowd a few score feet away, and he had his mouth open to call on them to assist him, when he saw something that stopped his words in his throat.

His attention had been on the temple proper. In his endeavor to move, his gaze flicked over the surrounding park.

Five of Rosamind's young poets were hanging from a tree limb at the edge of the temple grounds farthest from the temple. From a stouter tree nearby, six juniors and three scientists were still kicking spasmodically.

As Alden stood paralyzed, a dreadful screaming came from four initiates whose necks were just being fitted with rope halters.

The screaming ended, as the wagon on which they were standing was pulled from under them.

The Lord Leader walked the streets of Linn. The downtown markets were crowded with traders from the hills and from across the lake, and there was the usual pack of wild-eyed primitives from the other planets. It was no effort at all to start a conversation.

He talked only to people who showed no sign of recognizing the unshaven man in the uniform of a private soldier as their ruler. It didn't take long to realize that the thousand persuasise men he had sent out to argue his side of the hangings were doing yeoman service. No less than three of them approached him during the course of the afternoon, and made skillful propaganda remarks. And the five farmers, three merchants and two laborers, to whom he talked, all answered his rough criticism of the Lord Leader with pro-government catchphrases they could only have heard from his own men.

It was gratifying, he told himself, that the first crisis he had forced was turning out so well.

The Linnan empire was only a generation out of the protracted civil war that had brought the Linn family to the leadership. His tax collectors were still finding the returns lean. And trade, though it was reviving swiftly in Linn itself, was making a much slower recovery in other cities, which were not favored by special exemptions.

Several wars of conquest were under way, three of them on Venus against the Venusian tribes. Ostensibly, these wars were being fought to punish the tribes for their raids against the Earth. But the Lord Leader knew of at least two more important reasons. First, there was not enough money at home to pay the soldiers who, his generals reported, were still in a dangerously revolutionary mood. And second, he hoped to replenish the treasury with loot from conquered cities.

The Lord Leader paused mentally and physically before the open air shop of a dealer in ceramics. The man had the Linnan cast of feature and was obviously a citizen, or he wouldn't be in business. Only the opinions of citizens mattered. This one was in the throes of making a sale.

While he waited, the Lord Leader thought of the temples. It seemed clear that the scientists had never recovered the prestige they had lost during the civil war. With a few exceptions they had supported Raheinl until the very day that he was capured and killed. (He was chopped into pieces by soldiers wielding meat axes.) The scientists promptly and collectively offered an oath of allegiance to the new regime, and he was not firmly enough entrenched in power to refuse.

He never forgot, however, that their

virtual monopoly of atomic energy had nearly re-established the corrupt republic. And that, if they had succeeded, it was he who would have been executed.

The merchant's sale fell through. He walked over grumpily, but at that moment the Lord Leader noticed a passerby had paused, and was staring at him with half recognition.

The Lord Leader without a word to the merchant turned hastily, and hurried along the street into the gathering dusk.

The members of the Scientists Council were waiting for him when, satisfied that his position was inassailable, he returned finally to the palace.

It was not an easygoing gathering. Only six of the seven members of the council of scientists were present. The seventh, the poet and historian, Kourain, was ill, so Joquin reported, with fever. Actually, he had suffered an attack of acute caution on hearing of the hangings that morning, and had hastily set out on a tour of distant temples.

Of the six, at least three showed by their expressions that they did not expect to emerge alive from the palace. The remaining three were Mempis, recorder of wars, a bold, white-haired old man of nearly eighty; Teear, the logician, the wizard of numbers, who, it was said, had received some of his information about complicated numbers from the gods themselves; and, finally, there was Joquin, the persuader, who, for years, had acted as liaison between the temples and the government.

The Lord Leader surveyed his audience with a jaundiced eye. The years of success had given him a sardonic mien, that even sculptors could not eradicate from his statues without threatening the resemblance between the referent and the reality. He was about fifty years old at this time, and in remarkably good health. He began with a cold, considered and devastating attack on the Raheinl temple. He finished that phase of his speech with:

"Tomorrow, I go before the Patronate to justify my action against the temple. I am assuming that they will accept my explanation."

For the first time, then, he smiled bleakly. No one knew better than he or his audience that the slavish Patronate dared not even blink in a political sense without his permission.

"I am assuming it," he went on, because it is my intention simultaneously to present a spontaneous petition from the temples for a reorganization."

The hitherto silent spectators stirred. The three death-expecting members looked up with a vague hope on their faces. One of the three, middle-aged Horo, said eagerly:

"Your excellency can count upon us for—"

He stopped because Mempis was glaring at him, his slate-blue eyes raging. He subsided, but gradually his courage returned. He had made his point. The Lord Leader must know that *he* was willing.

He experienced the tremendous inner easing of a man who had managed to save his own skin.

Joquin was saying suavely, "As Horo was about to state, we shall be happy to give your words a respectful hearing."

The Lord Leader smiled grimly. But now he had reached the crucial part of his speech, and he reverted to legalistic preciseness.

The government—he said—was prepared at last to split the temples into four separate groups as had been so long desired by the scientists. (This was the first they had heard of the plan, but no one said anything.) As the scientists had long urged, the Lord Leader went on, it was ridiculous that the four atom gods, Uranium, Plutonium, Radium and Ecks should be worshiped in the same temples. Accordingly, the scientists would divide themselves into four separate organizations splitting the available temples evenly among the four groups.

Each group would give itself to the worship of only one god and his attributes, though naturally they would continue to perform their practical functions of supplying transmitted god-power to all who sought to purchase it under the government regulations.

Each group would be headed, not by a council of equals as was the temple system at present, but by a leader for whom an appropriate title must be selected. The four separate temple leaders would be appointed for life by a joint committee of government and temple delegates.

There was more, but they were details. The council had its ultimatum. And Joquin at least cherished no illusions. Four temple groups, each ruled by a willful scientist, responsible to no one except perhaps the Lord Leader, would end forever any hopes the more enlightened scientists entertained.

He rose hastily, lest one of the fearful councillors should speak first. He said gravely:

"The council will be very happy to consider your offer, and feels itself privileged to have in the government a lord who devotes his obviously valuable time to thoughts about the welfare of the temples. Nothing could—"

He had not really expected to manage a postponement. And he didn't. He was cut off. The Lord Leader said with finality:

"Since I am personally making the announcement in the Patronate chamber tomorrow, the Scientists Council is cordially invited to remain in the palace to discuss details of reorganization. I have assumed this will require anywhere from a week to a month or even longer, and I have had apartments assigned for your use."

He clapped his hands. Doors opened. Palace guards came in. The Lord Leader said:

"Show these honored gentlemen to their quarters."

Thus was the council imprisoned.

Scientist Alden, tottered through the crowd before the Raheinl temple on legs that seemed made of dough. He bumped into people, and staggered like a drunken man, but he was only dimly aware of his gyrations.

If he had been the only person in the group reacting, he would have been marked instantly, and dragged off to the gibbet. But the executions caught the throng by surprise. Each new spectator casually approaching to see what was going on suffered his own variation of tremendous shock. Women fainted. Several men vomited, and others stood with glazed eyes.

As he approached one trailing end of the crowd, Alden's brain began to trickle back into his head. He saw an open gate; and he had darted through it, and was floating—that was the new sensation in his legs—through the underbrush, when it struck him that he was inside the grounds of the Town palace of Lord and Lady Creg Linn.

That brought the most terrible moment of the morning. Trapped, and of his own doing. He collapsed in the shelter of an ornamental shrub, and lay in a half faint of fright. Slowly, he grew aware that there was a long, low outhouse ahead, and that trees would shelter him most of the way. He recognized that he could not safely hope to return the way he had come, nor dared he remain where he was. He rose shakily to his feet, and the gods were with him. He found himself shortly crouching in the long, narrow, hay storeroom adjoining the stables.

It was not a good hiding place. Its width was prohibitively confining, and only by making a tunnel in the hay near the door farthest from the stables did he manage to conceal himself.

He had barely settled down when one of the stable doors a dozen feet to his right opened. A four-pronged fork flashed in a leisurely fashion, and withdrew transporting a bundle of hay.

With a casual kick, the stable hand slammed the door shut, and there was the sound of retreating footsteps. Alden lay, scarcely breathing. He was just beginning to emerge from his funk a few minutes later, when, *bang*! another door opened, and another fork gathered its hay, and departed.

That was his morning, and yet despite the repeated nervous shocks, by noon his mind had almost resumed normal functioning. He had his first theory as to why he had escaped the round-up that had cought the others. Only two weeks before he had moved to his new residence on the Avenue of Palms. The soldiers must have proceeded to his old address, and then had to cross the city to his new home, with the result that he had left the house by the time they arrived.

Of such tenuous fabrics the patterns of his escape were woven. Alden shivered, and then, slowly, anger built up inside him, the deadly, gathering anger of a man wrongly persecuted. It was a fury that braced him for eventualities, and he was able at last to think with a clear-cut logic of what he must do.

Obviously, he could not remain within the grounds of the Town palace. Odd little memories came to his aid, things he had observed in earlier days without being aware that he did so. He recalled that every few nights hay ricks turned into the palace gates. Judging by the emptiness around him, a new supply must be almost due.

He must leave before the afternoon was out.

He began to struggle along the line of hay to the right. There was a gate on that side, and he remembered having once glimpsed the stables through it while taking a walk.

By sneaking out of the end door and around to the side of the stable, and then through *that* gate— If only he could find another set of clothes hanging up in the stables, preferably in view of the long hair that scientists affected, a woman's overdress—

He found what he wanted in the right end of the stable, which was devoted to milk cows. The animals and he were quite alone while he arrayed himself in the raiment that the milkmaids pulled over their pretty dresses when they did their chores.

The Town palace, after its brief flurry the year before as a Linn residence, had reverted swiftly to its role of agricultural, industrial and clerical center. There were guards within sight of the gate, but they did not bother to question a rather stocky woman slave, who went out with a decisive manner as if she had been sent on an errand by a superior.

It was late afternoon when Alden presented himself at the Covis temple. He was admitted immediately by the astonished junior to whom he revealed his identity.

On the fourth day, the baby was still alive. The main reason was that Tania could not make up her mind.

"I've had the turmoil of birth," she said savagely, "and no woman in her right senses nullifies that casually. Besides —"

She stopped there. The truth was that, in spite of innumerable disadvantages, she could imagine certain uses for a son whom the gods had molded in their peculiar fashion. And in this regard, the urgings of Joquin were not without their effect. Joquin spent most of the fourth morning on the subject.

"It is a mistake," he said, "to assume that all the children of the gods are idiots. That is an idle tale of the witless mob, which pursues these poor creatures along the street. They are not given an opportunity for education, and they are constantly under pressures so great that it is little wonder few of them ever attain the dignity and sense of mature development."

His arguments took on a more personal flavor. "After all," he said softly, "he is a Linn. At worst, you can make of him a trustworthy aide, who will not have the same tendency to wander off to live his own life as will your normal children. By keeping him discreetly in the background, you might acquire that best of all possble slaves, a devoted son.

Joquin knew when to stop pushing. The moment he noticed from the thoughtful narrowing of the woman's eyes that his arguments were weighing with her, he decided to leave her to resolve the doubts that still remained. He withdrew smoothly, and attended the morning court of the Lord Leader—and there once more urged his suit.

The great man's eyes were watchful as Joquin talked. Gradually, his satiric countenance grew puzzled. The Lord Leader interrupted at last:

"Old man," he said curtly, "what is your purpose in thus defending the right to life of a freak?"

Joquin had several reasons, one of them almost purely personal, and another because he believed that the continued existence of the baby might, however slightly, be an advantage to the temples. The logic of that was simple. The baby's birth had precipitated a crisis. Its death would merely affirm that crisis. Conversely, if it remained alive, the reason for the ferocious reaction of the Linns would be negated to some small degree.

He had no intention of stating that particular reason, and he did not immediately mention his personal hope about the baby. He said instead:

"Never before has a child of the gods been deliberately put to death. It was always assumed the gods had their own obscure purpose in creating monsters in human form. Do we dare test at this time that such is or is not the situation?"

It was an argument that made the other man stare in astonishment. The wars the Lord Leader had fought had thrown him into contact with advanced thinkers and skeptics on several planets, and he had come to regard the gods as a means for keeping his rebellious subjects under control. He did not absolutely disbelieve in them, but he had never in his practical life taken their possible supernatural powers into account.

But he respected this scientist. He climbed to his feet, and walking down the steps, drew Joquin aside.

"Do you actually," he asked, "believe what you are saying?"

The question was an uncomfortable one. There was a time in Joquin's life when he had believed nothing. Slowly, however, certain things he had observed had brought a half conviction that the mighty invisible force given forth by the tiniest radioactive substance could have no other explanation. He said carefully:

"In my travels as a young man, I saw primitive tribes that worshiped rain gods, river gods, tree gods and various animal gods. And I saw more advanced races, some of them here on Earth, whose deity was an invisible omnipotent being who lives somewhere in space in a place

called heaven. All these things I observed, and in a similar fashion I listened to each group's particular account of the beginning of the Universe. One story has it that we all came from the mouth of a snake. I have seen no such snake. Another story is that a great flood deluged the planets, though how this could have been done with the available water, I do not know. A third story is that man was created from clay and woman from man."

He looked at his hearer. The Lord Leader nodded. "Continue."

"I have seen people who worshiped fire, and I have seen people who worshiped water. And then, as have so many others before me. I finally visited the valleys where our own gods are said to dwell. I discovered their residences on every planet, vast, desolate areas miles deep and miles long and wide. And in these areas, I saw from a safe distance behind lead embankments the incredible bright fires that still burn with unending fury in those fantastic deeps of Earth.

"'Truly,' I thought to myself, 'the gods, Uranium, Radium, Plutonium and Ecks are the most powerful gods in the Universe. Surely, I decided, 'no one in his right senses would do anything to offend them.'"

The Lord Leader, who had also examined some of the homes of the gods in the course of his peregrinations, said, "Hm-m-m!"

He had no time then for further comment. From somewhere—it seemed terribly near—there was a sharp sound louder than the loudest thunder that had ever bellowed from the skies. It was followed half a minute later by a roar so loud, so furious, that the palace floor trembled.

There was a pregnant pause, not silent. From all directions came the sound of windows shattering with a thousand tinkling overtones. And then, that disturbance was overwhelmed by a third explosion, followed almost instantly by a fourth.

This last was so vast a sound that it was clear to everybody that the end of the world was imminent.

When Alden entered the great Covis temple on the afternoon of the third day after the birth of the Linn baby, he was a tired, hungry man. But he was also a hunted man with the special thoughts of the fugitive.

He sank into the chair that was offered by the junior. And, while the young man was still in process of realizing the situation, Alden ordered him to inform no one of his presence except Horo, chief scientist of the Covis temple.

"But Horo is not here," the junior protested. "He has but just now departed for the palace of the Leader."

Alden began briskly to remove his female disguise. His weariness flowed from him. Not here, he was thinking gleefully. That meant *he* was the senior scientist in the temple until Horo returned. For a man who had had as many thoughts as he had during the afternoon, that was like a reprieve. He ordered that food be brought him. He took possession of Horo's office. And he asked questions.

For the first time, he learned the only reason so far made public, for the executions at the Raheinl temple. Alden pondered the reason throughout the early evening, and the more he thought the angrier he grew. His thinking at this time must already have been on a very radical plane, and yet, paradoxically, he felt mortified that the gods had been so profoundly insulted in their temples.

Somehow, with a crystalline certainty —that, yet, had in it no disbelief—he knew that they would not show their displeasure of their own volition. The thoughts of a fugitive tended automatically toward such practical convictions. Before the evening was half through, he was examining the possibilities.

Certain processes the gods had favored from time immemorial. Naval captains and other legal owners of spaceships brought ingots of iron to the temples. The ceremonial and money preliminaries being completed, the iron was then placed in close proximity to the uncovered god stuff for one day exactly. After four days, one for each god, the power of the god-stuff was transmitted to the ingot. It was then removed by the offerer to his ship where, with simple ceremonials, it was placed in metal chambers which any metal workers could make—and by the use of what was known as a pholectric cell—a device also known from the earliest times, like fire and sword and spear and bow—an orderly series of explosions could be started or stopped at will.

When enough of these metal chambers were used, the largest ships that could be constructed by man were lifted as easily as if they were made of nothingness.

From the beginning of things, the god-stuff in all temples had been kept in four separate rooms. And the oldest saying in

history was that when the gods were brought too close together, they became very angry indeed.

Alden carefully weighed out a grain of each supply of god-stuff. Then he had four juniors carry a metal chamber from the testing cavern into the garden at the rear of the temple. At this point it struck him that other temples should participate in the protest. He had learned that six of the seven members of the Scientists Council were still at the palace, and he had a rather strong suspicion as to their predicament.

Writing from Horo's ornate office, he *ordered* the acting chiefs of the temples of the absent councillors to do exactly what he was doing. He described his plan in detail, and finished:

"High noon shall be the hour of protest."

Each letter he sent by junior messenger.

He had no doubts. By noon the following day he had inserted his grains of uranium, radium, plutonium and ecks into the pholectric relay system. From what he decided was a safe distance, he pressed the button that clicked over the relays in order. As the wonderful and potent ecks, the last grain, joined the "pile," there was an explosion of considerable proportions.

It was followed swiftly by three more explosions. Only two of the temples disregarded the commands of the fugitive. They were the fortunate ones. The first explosion blew half the Covis temple into dust, and left the remnant a tottering shambles of dislodged masonry and stone.

No human being was found alive in any of the four temples. Of Alden there was not even a piece of flesh or a drop of blood.

By two o'clock mobs were surging around the foot of the palace hill. The palace guard, loyal to a man, held them off grimly, but retreated finally inside the gates, and the household of the Leader prepared for a siege.

When the pandmonium was at its height half an hour later, Joquin, who had been down in the city, returned by a tunnel that ran through the hill itself, and asked permission to speak to the mob.

Long and searchingly, the Lord Leader looked at him. Then finally he nodded.

The mob rushed at the gates when they opened, but spearmen held them back. Joquin pressed his way out. His was a piercing rather than a deep voice, but the rostrum that jutted out from the hill was skillfully constructed to enable a speaker to address vast throngs through a series of megaphones.

His first act was to take the ribbons out of his hair, and let it down around his shoulders. The crowd began to shout:

"Scientist. It's a scientist."

Joquin raised his hand. And the silence he received was evidence to him at least that the riots were about to end. The crowd was controllable.

On his own part, he had no illusions as to the importance of this mob attacking the palace. He knew that carrier pigeon messages had been dispatched to the three legions camped outside the walls of the city. Soon, a disciplined force would be marching through the streets, paced by cavalry units made up of provincial troops, whose god was a giant mythical bird called Erplen.

It was important that the crowd be dispersed before those trained killers arrived on the scene. Joquin began:

"People of Linn, you have today witnessed a telling proof of the power of the gods."

Cries and groans echoed his words. Then again, silence. Joquin continued:

"But you have misread the meaning of the signs given us today."

Silence only this time greeted his words. He had his audience.

"If the gods," he said, "disapproved of the Lord Leader, they could just as easily have destroyed his palace as they actually did destroy four of their own temples.

"It is not the Lord Leader and his actions to which the gods objected. It is that certain temple scientists have lately tried to split up the temples into four separate groups, each group to worship one of the four gods only.

"That and that alone is the reason for the protest which the gods have made today."

There were cries of, "But your temple was among those destroyed"

Joquin hesitated. He did not fancy being a martyr. He had seen two of the letters Alden had written—to the two temples which had not obeyed the instructions — and he had personally destroyed both letters. He was not sure how he ought to rationalize the fact that a purely mechanical union of godstuff had produced the explosions. But one thing at least was certain. The gods had not objected to their status of being

worshiped four in one temple. And since that status was the only one that made it possible for the scientists to remain strong, then what had happened *could be* the gods way of showing it was their purpose, too.

Joquin recognized uneasily that his reasoning was a form of sophistry. But this was no time to lose faith. He bowed his head before the shouting, then looked up.

"Friends," he said soberly, "I confess I was among those who urged separate worship. It seemed to me that the gods would welcome an opportunity to be worshiped each in his own temple. I was mistaken."

He half-turned to face the palace, where far more important ears were listening than any in the crowd below. He said:

"I know that every person who, like myself, believed the separatist heresy is now convinced as I am that neither the four gods or their people would ever stand for such blasphemy.

"And now, before there is any more trouble, go home, all of you."

He retreated rather hastily back into the palace grounds.

The Lord Leader was a man who accepted necessities. "There remains one undetermined question," he said later. "What is your real reason for keeping my daughter-in-law's baby alive?"

Joquin said simply, "I have long wanted to see what will happen if a child of the gods is given a normal education and upbringing."

That was all he said. It was enough. The Lord Leader sat with eyes closed, considering the possibilities. At last, slowly, he nodded his head.

I was to be allowed to live.

Alexander The Bait

By WILLIAM TENN

A new author presents an ingenious new idea on how to get interplanetary travel started. It's done with a Moon-radar system. But not quite as the world thought—

You aren't likely to get a quick punch in the snoot these days by professing admiration for Alexander Parks. Time has softened even the families of the crews who rode the GA fleet into nowhere; and uncomfortable understanding of the great thing the man did has increased with the years.

Still, he is penalized by a hidebound agency in a manner that, to him at any rate, is especially horrible. I refer to the FLC. I hope they read this.

We wandered into each other a couple of years after the war to end isolationism. I had just landed a Toledo accordion on a freight runway and was now headed for a bar. There are some pilots who know just how much rye they need after towing an accordion; me, I just keep pouring it down until my heart floats back into place.

A cab came up to the flight building and a well-built man with a surprisingly small head got out. As I ran up to nail the cab, the man turned and stared at me. Something familiar about that shoe-button skull made me stop.

"Were you in the Army Air Forces?" he asked.

"Yeah," I answered slowly. "The so-called Swasticker Squadron. Forty—Alex Parks! The voice with a dial!"

He grinned. "That's right, Dave. For a minute I thought you were only talking to ex-flying officers. Ground control people carry a lot of inferiority complex around with them. You're looking well."

He looked better. The clothes he was wearing had been designed by a tailor with the salary of a movie executive. I remembered something from the newspapers. "Didn't you sell some invention or other to some corporation or other?"

"It was the Radar Corporation of America. Just been capitalized. I sold them my multi-level negative beam radar."

"Get much?"

He pursed his lips and let his eyes twinkle. "Oh, a million five hundred thousand dollars.'

I flapped my lips and let my eyes bug. "L-lotta dough. What're you going to do with it?"

"A couple of unholy scientific projects I've always dreamed about. I might be able to use you." He motioned to the cab. "Can we go somewhere and talk?"

"I'm on my way to a bar," I told him as the cab got under way. "Just came in with an accordion."

"Accordion? Is that what you freight pilots call these glider trains?"

"Yeah. And if you want to know why, just think of what happens when you hit an airpocket. Or a sudden head-wind. Or a motor stall." I grunted. "We make music—heavenly music."

We sat in a back booth of the *Matched Penny Cafe,* Alex smiling admiringly as I consumed half the amber output of a good-sized distillery. "You'd have to cut down on that guzzling if you came with me," he said.

I finished the glass, licked my teeth, my lips, and sighed. "Where?"

"A mesa in Nevada I've purchased. Have to have someone I can trust to fly equipment in and help me around the place with some moderately heavy construction. Someone I can trust to keep his mouth shut. A heavy drinker keeps his open too much to suit me."

"I'll do that," I assured him. "I'd drink nothing but curded yak milk to get out of this aerial moving van business. Making an occasional trip will be nothing compared to my daily routine with collapsible coffins. It's the combination of monotonous grind with the angel of death that's making me bottle-happy."

He nodded. "And the lack of any long-range useful goal. You flew on almost as rigid a schedule during the war, but—well, that was war. If there were something fine for which you were risking your life, instead of the transportation of electrical harmonicas—"

"Like interplanetary travel? That was one of your bugs. Going to do some experimenting along that line?"

Alex slid his forefinger along the green marble table top. "I'd need much more money than that. It's a nice thought—the human race finds itself at the point today where a little research, a little refinement of existing techniques, would send it to the stars. But the people who could do it, the big manufacturing corporations, can't see enough incentive; the people who would do it, the universities and research foundations, can' see enough money. We sit on this planet like a shipwrecked sailor on a desert island who sees a pair of oars in one spot and a boat in another and can't quite make up his mind to bring the two together.

"No, not interplanetary travel. Not yet. But something along that line. That beam I discovered gave me the reputation of the world's greatest radar expert. I intend to build the largest installation ever on that mesa—and make a long-distance radar survey."

This wasn't the Alexander Parks I'd known. This idea, I decided, showed nothing of what I'd always thought he'd do if he had the money to indulge his sardonically soaring mind, his genius for subtlety. "A radar survey?" I asked weakly.

His little head grew wide with laughter. "A map, my dear Dave—a topographical map of the Moon!"

Nevada was nice. Plenty of landing space. Plenty of working space. Practically no one to ask questions. Sharp, fragrant air on the top of Big Bluff Mesa, that affected me almost as strongly as hooch used to. Alex claimed atmospheric conditions here were perfect for maximum equipment efficiency

The equipment was odd. Of course, I knew radar had developed enormously since the days of primitive gadgetry in the early forties. Parks' own MLN Beam had successfully fused communication and noncommunication radio into a fantastic set-up that required no transmitter and made it possible to tune in on any outdoor event in the world. (It was still in production then.)

Alex and I got the shacks built ourselves, but we ran into trouble with the huge horizontal antenna and the gyroscopically stabilized dipoles. In the end he

hired a man named Judson from Las Vegas. Judson did odd jobs around the place and supplied an extra pair of hands in construction jobs. Mrs. Judson cooked our meals. Alex admitted the necessity for Judson, but seemed to regret it nonetheless, I suspected he sent me on sleeveless errands now and then, as if to keep me from having a coherent knowledge of his methods. I shrugged at that thought. If he thought I knew enough about modern radar, I was highly complimented.

When I flew in with a rattling glider train of impossible coils and surrealist tubes, he often insisted I stay put while he made some infinitesimal adjustment in the lab shack. I could climb out of the plane, then, but only if I went directly to the hut which was our living quarters.

Emmanuel Corliss, of the Radar Corporation of America, begged a ride from me once. All the way to Nevada he sang Alex's praises; he told me of the statue of Alex in the foyer of the corporation's sky-scraper in Manhattan; he even had a copy of an unauthorized biography titled "Alexander Parks—Father of Global Communication." He said he wanted Alex to come back as chief research consultant. I thought atom-head would enjoy having his ego caressed.

I was wrong.

Fifty miles from Big Bluff, a deep voice rattled the reception panel. "Who's that you're talking to, Dave?"

Carless piped up. "Thought I'd look in on you, boy. We might be able to use whatever you're working on now."

"Well, you can't. The moment you land, Dave, unhitch the gliders and fly Mr. Corliss back to the nearest airport. Got enough fuel?"

"Yep." I was embarrassed. Felt like a neighbor overhearing a newly-wed couple's first quarrel.

"But, Parks," the executive wailed, "you don't know what an important figure you've become. The world wants to know what you're doing. Radar Corporation of America wants to know what you're doing."

Parks chuckled. "Not just yet. Don't get out of that plane, Corliss, or you'll get a load of buckshot in the most sensitive part of your upholstery. Remember, I can call you a trespasser."

Corliss sputtered angrily. "Now you listen to me—"

"No, you listen to me. *Don't get out of that plane* as you love your swivel chair. Believe it or not, old man, I'm doing you a favor."

That was sort of that. After I'd deposited the red-faced corporation president, I bumped down to the mesa pretty thoughtfully. Alex was waiting for me; he looked thoughtful, too.

"Don't do that again," he told me. "Nobody comes out here until I'm ready for, well, for publication. I don't want strangers, especially scientific strangers, poking around in my layout."

"Afraid they'd copy it?"

My question tickled him. "That's it . . . almost too exactly."

"Afraid I'll copy it?"

He threw a quick, shrewd glance at me. "Let's have supper and do some talking, Dave." He put his arm around my shoulders.

While Mrs. Judson dealt out the plain food very plainly prepared, Alex studied me in the hard, unwinking fashion he had. I thought again that he resembled nothing more than a miniature camera set on a massive, unwieldy tripod. Grease-stained blue jeans had long ago replaced the soft sartorial perfections in which I'd first seen him. The father of global communication!

He looked covertly at Judson, saw that the hired man was interested in nothing but his stew, and said in a low voice: "If you feel I distrust you, Dave, I'm sorry. There is a good reason for all this secrecy, believe me."

"That's your business," I told him shortly. "You don't pay me for asking questions. But I honestly wouldn't know an oscillator screen from an indicator rack. And if I did, I wouldn't tell anyone."

He shifted on the hard wooden bench and leaned against the metal wall behind him. "You know what I'm trying to do. I send a high-frequency beam at the Moon. Some of it is absorbed in the ionosphere, most of it gets through and bounces off the Moon's surface. I catch the reflection, amplify it, record the strength and minutest change in direction on a photographic plate and send another, slightly different, beam out immediately. On the basis of multiple beams, I build up a fairly detailed and accurate picture of the Moon from very close range. My multilevel negative radar provides a somewhat stronger beam than science has had at its disposal before, but essentially the principle is basic radar. It could have been done, with a little difficulty, ten years ago. Why wasn't it?"

Stew congealed into an unsavory jelly

in my plate. I was interested in spite of myself.

"It wasn't done," he continued, "for the same reason we don't have interplanetary travel, suboceanic mining, grafting of complete limbs from corpses on amputation cases. Nobody can see any profit in it, any *immediate*, certain profit. Therefore, the small amount of research that is necessary to close the gap between the knowledge we already have and the knowledge we almost have goes unfinanced."

"But work goes on in those fields," I pointed out.

"Work goes on, all right. But at what a slow pace, under what heartbreaking conditions! Have you ever heard the legend of how my namesake, Alexander the Great, circled the world astride a giant bird? He hung a piece of meat from a long pole and dangled it in front of the bird's beak. A strong gust of wind blew the meat close enough for the creature to snatch, and the redoubtable Alexander immediately cut a piece of flesh from his side and attached it to the pole. Thus, he was able to complete his trip with the bird futilely trying to reach the meat by increasing its speed.

"The story occurs in several folklores with different heroes, but it shows how fundamental was the ancients' understanding of human motives. Incidentally, it is also a beautiful illustration of the laws of compensation. In every age, a man must offer himself up as bait so that progress will not be limited to the back pages of the dictionary. We can't be said to be moving forward if we touch none of our newer potentialities."

I stirred the stew with a heavy spoon, then pushed it away and reached for the coffee. "I see what you mean. But why tell me all this?"

Alex rose, stretched and moved towards the door. I smiled apologetically at my coffee and Mrs. Judson and followed him.

The cool Nevada night hung heavily as we walked outside. A myriad stars blazed pinpoint mysteries. Was this black, inviting space man's natural medium, a domain waiting for the flashing tread of a master? Could it be that my puny species was the appointed ruler of these vastnesses? I wondered how it would feel to bank suddenly out there, to level out for a landing. My hands itched for an unmade, still nonexistent throttle.

"These are the maps I've made to date," my employer observed. We were standing in the lab shack with banked transformers, nightmares in spun glass and twisted wire weaving in and out of the huge display tubes around us.

I glanced carelessly at the maps; I was no astronomer. Then I glanced very carefully indeed at the maps.

The point is they weren't maps. They were pictures—over a thousand aerial photographs—taken from a uniform height of about five hundred feet. They had sharper detail than any aerial photographs I've ever seen. You could count the rocks on the surface; you could note pits and narrowest fissures.

"They are pretty good," Alex said. He stroked one of the glossy sheets lovingly. "A section of the Tycho Brahë Crater."

"Why the Samuel Aloysius Hill don't you publish?"

"Couldn't till now." He seemed to be in the throes of a hard decision. "I had to check something first. And now I've got to trust you with my life's work by asking you to play a particularly dirty trick on yourself. I still can't afford to explain; my conversation tonight was sort of a song and dance to go with the request. But some day it will all fit."

"Go ahead. I'm a loyal employee; I love the firm."

The pinhead seemed to swell. "One week from today I want you to take a trip up to the Canadian North Woods with a couple of packages. You'll have a map with X's scattered over it; the co-ordinates of each X will be marked in the margin. Latitude and longitude in terms of degrees, minutes and seconds. Bury each package about two feet underground at X-designated spots, making certain that it is at the exact intersecting point of the co-ordinates. Then go away."

"Huh?"

"Go away and forget you ever saw those packages. Don't even dream about them. Don't see me except socially for at least three years. Forget you ever worked for me. Forget you keep the plane and I'll add a sizable check as a parting gift. Will you do it?"

I let my mind chew on it for a while. It didn't make sense, but I knew he'd told me all he intended to. "O.K., Alex, I'll take the high road and I'll take the dough road. I'll make out."

He seemed tremendously relieved. "You will make out—much better than you think. Just wait a few months. When the united savants of the world start flocking in here, there will be lectures

and juicy magazine articles thrown at anyone who ever worked for me. Don't touch them with a transmitting antenna."

That made me laugh. "I wouldn't anyway. I don't play those games."

Alex shut off the light and we returned to the Judsons feeling pretty good about each other. That was the way a sweet guy called Alexander Parks climbed up on the altar of history. When I think of the fundamental ambition that drove him to that conversation, the action of the FLC seems cruel on a scale immeasurably picayune.

A week later I was flitting about the north woods laying little tarp covered eggs here and there by means of a chart so explicit as to be understandable by the littlest moron in one of his most difficult moments.

Newspapers caught my eye when I landed in Seattle. Full front-page spreads of the pictures Alex had showed me, smaller shots of Alex's small head surrounded by big-browed, white-maned profs from Oxford, Irkutsk and points east.

"Radar Genius Maps Moon," they screamed. "Sage of Nevada reveals work of two years. Scientists flock to mesa, claim telescopes now obsolete except as check. Alexander Parks announces he will make mineralogical survey of lunar surface."

So he had announced it. Good. I spent a portion of my last pay check investigating any new developments in the gentle art of making whiskey. The liquor, I found, hadn't changed; unfortunately, *I* had. Laboring under a diminished capacity, I gamboled from binge to hangover, from bar to hotel room, until I woke up in a hospital surrounded by a straitjacket.

After the doctor had chased the six-headed snakes away, I sat up and chirruped at the nurses. One luscious little redhead took to reading me the newspapers in a pathetic attempt at self-defense. I was getting the news in jerky flashes, what with her dodging around night tables and behind screens, when I heard something that made me reach out and grab the newspaper. The girl, who had been preparing for a last, all-out effort, looked a little dazed.

I still have a hazy memory of that nurse standing in a corner and shaking her head while I got clearance. The doc didn't feel I was cured yet at all, but he decided that as long as I wasn't talking too loudly about ring-tailed octopi it would be just as well for his hypo house if I took up residence elsewhere.

Bascomb Rockets were the nearest and I was there a half hour after a starchy clerk had given me my clothes, money and a little white certificate, suitable for framing. I'd gone through every newspaper in reach by the time I arrived; so I was prepared for what I saw.

A two-by-three experimental house which had been operating on a frayed shoestring of a budget was expanding like a galaxy turned supernova. Far off into the distance, I could see shops and hangars going up, stock piles being built, equipment arriving by the cubic ton.

Tim Bascomb was checking blueprints in front of the half-finished Parthenon that was to be the company's main building. I'd met him at an ex-pilots' convention a year after the war, but I thought I might as well reintroduce myself—some insensitive people manage to forget me.

The moment he heard my voice, he dropped the blueprints and grabbed my hand. "Dave! You haven't signed any contracts yet?" he finished anxiously.

"Nary a clause," I told him. "Can you use a former B-29er and accordion player?"

"Can we use you? Mr. Hennessey—Mr. Hennessey, get me contractual form 16, no, better make that 18. You were in on the early jet and rocket jobs," he explained. "That puts you into an advanced category."

"Hiring a lot of the boys?"

"Are we? Every backyard gadgeteer in the country is forming a corporation these days and we're keeping up with the best of them. They say the airlines are using hostesses as co-pilots and candy butchers as radiomen. You'll find Steve Yancy and Lou Brock of the Canada-Mexico Line in that shack, over there; they'd like to see you."

Mr. Hennessey and a stenographer served as witnesses. I started scribbling my name on that contract as soon as I saw the numbers after the dollar sign under "salary." Bascomb laughed.

"I'll back our payroll against any in the world. Not that at least fifty other companies don't do as well. We've got the backing of Radioactive Metals and the Ginette Mining Corporation as well as a government subsidy of five million."

I wiped some blue-black ink off my fingers. "Since when is the government interested?"

He chuckled. "Since when?" We began walking to a huge structure labeled

"Bascomb Rockets Experimental Pilots —No Admittance to Unauthorized Personnel." Look, Dave boy, when Parks took those radar snapshots of the Moon, the astronomers were interested. When he worked out a spectroscopic table and found there were healthy hunks of gold under the surface, the banks and mines began to sit up. But when that Caltech prof turned Parks' gimmick along eighty miles of the Moon's Alpine valley and found alternate layers of radium and uranium, the nations of this planet looked up from atom bomb experiments long enough to harness everybody who knows the Moon is a quarter of a million miles from Earth. It's no longer a matter of the first extra-terrestrial explorer becoming a trillionaire overnight, but of folks cooking atom bombs in their kitchens."

I looked at the tractors backing and filling around me; at the cement-sloppy wheelbarrows being trundled by an army of construction workers; at the bare scaffolding of shops rising on every bare foot of ground. This scene was being duplicated everywhere in every state, probably in every nation. Slap some sort of a ship together, solve the problems with any kind of jerry-built apparatus—*but get to the Moon first!*

"It isn't only a matter of national defense, either," Tim was explaining. "We almost have atomic power, in fact, we already have it but not in a commercial form. With the uranium that can be dredged out of the Moon, the old Sunday Supplement dream of crossing the Atlantic with a teaspoonful of sand for fuel will come true. General Atomics is devoting half their budget to spaceship research. They may not be the first outfit to set a job down on Tycho, but they sure will bust a gut trying."

He led me into the pilots' shack where a lecture on astrogation was in progress. And that day the only rockets on the Bascomb lot were still on drawing boards!

"The Mad Scramble"—isn't that the name of the definitive history of the period? It was mad. People still remember the first casualties to hit the front pages: Gunnar and Thorgersen getting blown to bits a half-mile up; those six Russian scientists flaming into an incandescence that registered on every astronomical camera pointed at the Moon. Then that wave of reaction sweeping the world toward the end of the decade and laws clamping down on irresponsible corporations and wildcat experimenters.

Even then, Steve Yancy and his kid brother got knocked off on a simple experimental flight outside Earth's atmosphere. No fundamental principle overlooked, we were just building carelessly.

When Parks finally dropped in on us on his way from the Leroy Propulsion Project, we seemed to be getting nowhere fast. That was the Black April, the month of the GA Fleet. Bascomb had discovered I knew Parks personally and begged me to bring him into the firm. "He's just hopping about giving advice to anyone who wants it from him. With his reputation, if he ever went to work for one organization he could name his own price. Try to get him to name it for us."

"I'll try," I promised.

"Of course, I know his basic interest is in radar research. If his machine had stopped with mapping the Moon, every hick college would probably have had an appropriation for a radar telescope or whatever they call it. But since he found uranium in them thar craters, kids are being jerked into research projects as fast as they finish elementary physics. That guy from Caltech—what *was* his name?—who first detected radio-active stuff with Parks' equipment, they say he has to go up to the mesa every time he wants to survey some more moon. He can't get the university even vaguely interested in building a toy for him, and Alex P. won't let anyone near the layout unless he's on the scene holding their leash."

"Yeah." I grinned wryly, remembering the way Emmanuel Corliss had been sent back to his dictaphone. Even when some scientific journals had attacked the tight control he maintained over the world's only lunar-surveying radar, he had retorted angrily that the entire apparatus had been developed and built out of his own brain, time and funds and if anyone didn't like it they could build themselves another. Of course, with every research penny eventually finding its way into spaceship design, he had the only game in town.

Parks laughed when I gave him Bascomb's message. He clambered out of the new-smelling, black and silver job that I was to take on a shakedown in a week and sat on the curving metal runway.

"No, Dave, I like this being advisory expert to big business in rocket research.

I get to travel and see all the different things we're trying. Did you know Garfinkel of Illinois is working on a Cosmoplane—sort of a sailboat sensitive to cosmic rays? I'd rather not get stuck in a job in one corner of this business. After all, anyone may hit it."

"But that isn't like you, Alex," I argued. "You were always the kind of guy who wanted to do things himself. This work isn't right up your alley, it *is* your alley. You're the one man Bascomb Rockets needs, not as a part-time unpaid specialist who hits us once a month on his look-see circuit, but as the director, the co-ordinator of our research. I'm just a stumblebum who can make with a joystick, but you are the guy who'll get us there."

"Ever mention our working together?"

"No." I sighed. He evidently didn't want in. I helped him change the subject. "Nasty—this GA business."

He was staring at the ground. He nodded slowly, then looked up. There were ridges of anguish on his face. "That was Corliss," he said in a low, earnest voice. "He became president of General Atomics six months ago. The idea of the Fleet probably seemed like a good publicity trick."

I disagreed with him. "After all," I pointed out, "the logic was good. Ten ships setting off for the Moon together. When one of them hit a snag, the others could come up and help. In case of an impending blowup, the crews of the threatened ship could be transferred to safety. It was just plain unfortunate that Fouquelles didn't discover the deep space Jura rays until a week after they left. From now on everything we build will be insulated against the stuff."

"Five hundred men," Alex brooded. "Five hundred men and women lost without a trace. Nothing in the papers today about a radio signal, about some debris coming down somewhere?"

"No. They probably got out of control and drifted into the sun. Or maybe the ships—those that are left—are scudding aimlessly out of the system."

He was himself again when I left him at the gate. "Maybe I'll have cracked it the next time I see you," I said. "We're moving pretty slowly, though."

"That doesnt' mean anything." He shook my hand warmly. "Man has his heart set on getting off this planet. He'll do it—perhaps sooner than he thinks."

Two months later, Captain Ulrich Gall landed the Canadian *Flutterer* III in Plato Crater, using the double-flow drive. It's high-school history now how Gall lined his spacesuited crew behind him and prepared to move through the air lock. How he caught his foot on the ramp, and how his polynesian "boy," Charles Wau-Neil, hurrying to extricate him, tripped on the lock and shot out onto the lunar surface—thus being the first human to touch another world.

I was co-pilot of the fifth ship to reach the Moon—"The Ambassador of Albuquerque." I was also the first man to set insulated foot on the lunar Apennines. So I'll have a place in some six-volume detailed history of lunar exploration: "An interesting discovery is credited to a minor adventurer named—"

Well, you know what happened. Toehold, the colony Gall left on the Moon, continued the feverish examination of mineralogical samples. No go. In six months Toehold scientists radioed a complete confirmation of Gall's early suspicions.

There was no uranium on the Moon. No radium. And there was just enough gold to be detectable in the most delicate analyses.

Of course they did find some nice beds of iron ore. And someone discovered rocks beneath the surface from which oxygen and the lighter elements could be extracted with ease, making possible Toehold's present indigenousness. But no uranium!

I was on Earth when the storm of public opinion broke. Financed and encouraged by hysterical corporations, it broke first around the head of a certain California professor of astronomy and buried him. He, it was, who had first announced the presence of radio-active minerals on the Moon as a result of experiments with Parks' radar. Then it turned on Parks.

Remember the headlines that day? "Parks Admits Fraud" in letters as big as the end of the world. "Alexander Parks, Nevada charlatan, explained to the FBI today how he planted transmitters near pitchblende and gold deposits in Canada, co-ordinating his infernal machine with them to make it appear that the impulses were arriving from a given portion of the Moon. 'I never allowed anyone to investigate the machine too closely,' Parks leered, 'and this, with my international reputation as a radar expert, prevented discovery.' "

I scooted for his mesa. There were

state police coming out of the woodwork, FBI men being trampled underfoot and what looked like a full infantry regiment marching back and forth. After I'd satisfied everybody that I was a reputable citizen, I was allowed to see Alex. He was evidenly a *de facto* prisoner.

Alex was sitting at the plain table, his hands clasped easily in front of him. He turned and smiled with pleasure as I walked in. The man walking puffily up and down the small room turned too. With some difficulty I recognized the face above the purple neck as belonging to Emmanuel Corliss. He tore up to me and peering out of red-rimmed eyes began to grunt. After a while, I interpreted the grunts as "*You* ask him why. Ask him why he did it, why he ruined me!"

"I've told you that at least a dozen times," Parks said mildly. "There was nothing against you personally, nothing against anybody. I simple felt it was time we had interplanetary travel and that greed was a good incentive. I was right."

"Right!" Corliss screeched. "Right! Do you call it right to flimflam me out of three million dollars? I personally invested three million dollars to get what? Iron ore? If I want iron ore, isn't what we have on this planet good enough?"

"Your consolation, Mr. Corliss, in your financial bereavement, is that you have helped humanity to take a major historical step. You will recall that I went as far as using a shotgun in an attempt to keep you from getting involved in my . . . my plans. Beyond suggesting that you record it in your income tax under bad investments, I'm afraid I can't help you."

"Well, I can help you!" The president of General Atomics and the Radar Corporation of America shook a pudgy, quivering finger under Parks' nose. "I can help you into jail. I'll spend the rest of my life trying!" He slammed the door behind him so hard that the shack seemed to move three feet.

"Can he do anything, Alex?" I asked.

He shrugged. The pinhead looked tired. I suspected there had been a lot of this lately. "Not so far as I know. All the development on my lunar radar was out of my own funds. While I gave advice freely to those who wanted it, I never accepted a penny from any corporation or individual. I benefited in no material way from the fraud. My lawyers tell me it may be a tight squeeze, but there isn't anything that can be done in the way of punishment. I'm in the clear. Are . . . are you angry at me?"

"No!" I put my hand on his shoulder. "You've made life worth living for hundreds of us. Listen, Alex," I said softly, "I don't know what history will say, but there are a lot of sky-jockey's who will never forget you."

He grinned up. "Thanks pal. I did try to keep you out of the mess. Name a precipice after me."

We can't go any further than the Moon right now, but I have a dandy little two-man ferrying job—secondhand of course—and as soon as I can scrounge up enough cash, I'm going to fit in with that new triple-flow drive. They say Venus should be in an early geological stage, and that means a lot of whole radium and uranium will be lying about. The first man to get there and stake out a claim would be kinda well-to-do the rest of his life. Yeah, that talk may be just some more sucker bait, but, just think, if it *is* so—

Whatever its original impulses, interplanetary transportation is here to stay. But what of the man responsible?

The Federal Lunar Commission (FLC) has issued a permanent injunction to all its offices against granting Alexander Parks terrestrial clearance. And unless he stows away on some supply ship, or time heals that particular wound, I'm afraid he'll be a wistful Earthlubber to his dying day.

Placet Is A Crazy Place

By FREDERIC BROWN

It wasn't that Placet itself was so crazy; it was just that the things Placet's gravitic situation did to human sensory organs was really remarkable. You could even solve impossible problems quite unintentionally—

EVEN when you're used to it, it gets you down sometimes. Like that morning—if you can call it a morning. Really, it was night. But we go by Earth time on Placet because Placet time would be as screwy as everything else on that goofy planet. I mean, you'd have a six-hour day and then a two-hour night and then a fifteen-hour day and a one-hour night and—well, you just couldn't keep time on a planet that does a figure-eight orbit around two dissimilar suns, going like a bat out of hell around and between them, and the suns going around each other so fast and so comparatively close that Earth astronomers thought it was only one sun until the Blakeslee expedition landed here twenty years ago.

You see, the rotation of Placet isn't any even fraction of the period of its orbit and there's the Blakeslee Field in the middle between the suns—a field in which light rays slow down to a crawl and get left behind and—well—

If you've not read the Blakeslee reports on Placet, hold on to something, while I tell you this:

Placet is the only known planet that can eclipse itself twice at the same time, run headlong into itself every forty hours, then chase itself out of sight.

I don't blame you.

I didn't believe it either, and it scared me stiff the first time I stood on Placet and saw Placet coming head-on to run into us. And yet I'd read the Blakeslee reports and knew what was really happening, and why. It's rather like those early movies when the camera was set up in front of a train and the audience saw the locomotive heading right toward them and would feel an impulse to run even though they knew the locomotive wasn't really there.

But I started to say, like that morning. I was sitting at my desk, the top of which was covered with grass. My feet were—or seemed to be—resting on a sheet of rippling water. But it wasn't wet.

On top of the grass of my desk lay a pink flowerpot, into which, nose-first, stuck a bright green Saturnian lizard. That—reason and not my eyesight told me—was my pen and inkwell. Also an embroidered sampler that said "God Bless Our Home" in neat cross-stitching. It actually was a message from Earth Center which had just come in on the radiotype. I didn't know what it said because I'd come into my office after the B.F. effect had started. I didn't think it really said "God Bless Our Home" because it seemed to. And just then I was mad, I was fed up, and I didn't care a holler what it actually did say.

You see—maybe I'd better explain—the Blakeslee Field effect occurs when Placet is in mid-position between Argyle I. and Argyle II., the two suns it figure-eights around. There's a scientific explanation of it, but it must be expressed in formulas, not in words. It boils down to this; Argyle I. is terrene matter and Argyle II. is contraterrene, or negative matter. Halfway between them—over a considerable stretch of territory—is a field in which light rays are slowed down, way down. They move at about the speed of sound. The result is that if something is moving faster than sound—as Placet itself does—you can still see it coming after it's passed you. It takes the visual image of Placet twenty-six hours to get through the field. By that time, Placet has rounded

one of its suns and meets its own image on the way back. In midfield, there's an image coming and an image going, and it eclipses itself twice, occulting both suns at the same time. A little farther on, it runs into itself coming from the opposite direction—and scares you stiff if you're watching, even if you know it's not really happening.

Let me explain it this way before you get dizzy. Say an old-fashioned locomotive is coming toward you, only at a speed much faster than sound. A mile away, it whistles. It passes you and *then* you hear the whistle, coming from the point a mile back where the locomotive isn't any more. That's the auditory effect of an object traveling faster than sound; what I've just described is the visual effect of an object traveling—in a figure-eight orbit—faster than its own visual image.

That isn't the worst of it; you can stay indoors and avoid the eclipsing and the head-on collisions, but you can't avoid the physio-psychological effect of the Blakeslee Field.

And that, the physio-psychological effect, is something else again. The field does something to the optic nerve centers, or to the part of the brain to which the optic nerves connect, something similar to the effect of certain drugs. You have—you can't exactly call them hallucinations, because you don't ordinarily see things that aren't there, but you get an illusory picture of what *is* there.

I knew perfectly well that I was sitting at a desk the top of which was glass, and not grass; that the floor under my feet was ordinary plastiplate and not a sheet of rippling water; that the objects on my desk were not a pink flowerpot with a Saturnian lizard sticking in it, but an antique twentieth century inkwell and pen—and that the "God Bless Our Home" sampler was a radiotype message on ordinary radiotype paper. I could verify any of those things by my sense of touch, which the Blakeslee Field doesn't affect.

You *can* close your eyes, of course, but you don't—because even at the height of the effect, your eyesight gives you the relative size and distance of things and if you stay in familiar territory your memory and your reason tell you what they are.

So when the door opened and a two-headed monster walked in, I knew it was Reagan. Reagan isn't a two-headed monster, but I could recognize the sound of his walk.

I said, "Yes, Reagan?"

The two-headed monster said, "Chief, the machine shop is wobbling. We may have to break the rule not to do any work in mid-periods."

"Birds?" I asked.

Both of his heads nodded. "The underground part of those walls must be like sieves from the birds flying through 'em, and we'd better pour concrete quick. Do you think those new alloy reinforcing oars the *Ark*'ll bring will stop them?"

"Sure," I lied. Forgetting the field, I turned to look at the clock, but there was a funeral wreath of white lilies on the wall where the clock should have been. You can't tell the time from a funeral wreath. I said, "I was hoping we wouldn't have to reinforce those walls, till we had bars to sink in them. The *Ark*'s about due; they're probably hovering outside right now waiting for us to come out of the field. You think we could wait till—"

There was a crash.

"Yeah, we can wait," Reagan said. "There went the machine shop, so there's no hurry at all."

"Nobody was in there?"

"Nope, but I'll make sure." He ran out.

That's what life on Placet is like. I've had enough of it; I'd had too much of it. I made up my mind while Reagan was gone.

When he came back, he was a bright blue articulated skeleton.

He said, "O.K., Chief. Nobody was inside."

"Any of the machines badly smashed?"

He laughed. "Can you look at a rubber beach horse with purple polka dots and tell whether it's an intact lathe or a busted one? Say, chief, you know what you look like?"

I said, "If you tell me, you're fired."

I don't know whether I was kidding or not; I was plenty on edge. I opened the drawer of my desk and put the "God Bless our Home" sampler in it and slammed the drawer shut. I was fed up. Placet is a crazy place and if you stay there long enough you go crazy yourself. One out of ten of Earth Center's Placet employees has to go back to Eearth for psychopathic treatment after a year or two on Placet. And I'd been there three years, almost. My contract was up. I made my mind up, too.

"Reagan," I said.

He'd been heading for the door. He turned. "Yeah, chief?"

I said, "I want you to send a message on the radiotype to Earth Center. And get it straight, two words: *I quit.*"

He said, "O.K., chief." He went on out and closed the door.

I sat back and closed my eyes to think. I'd done it now. Unless I ran after Reagan and told him not to send the message, it was done and over and irrevocable. Earth Center's funny that way; the board is plenty generous in some directions, but once you resign they never let you change your mind. It's practically an iron-clad rule and ninety-nine times out of a hundred it's justified on interplanetary and intragalactic projects. A man must be a hundred percent enthusiastic about his job to make a go of it, and once he's turned against it, he's lost the keen edge.

I knew the midperiod was about over, but I sat there with my eyes closed just the same. I didn't want to open them to look at the clock until I could see the clock *as* a clock and not as whatever it might be this time. I sat there and thought.

I felt a bit hurt about Reagan's casualness in accepting the message. He'd been a good friend of mine for ten years; he could at least have said he was sorry I was going to leave. Of course, there was a fair chance that he might get the promotion, but even if he was thinking about that, he could have been diplomatic about it. At least, he could have—

Oh, quit feeling sorry for yourself, I told myself. *You're through with Placet and you're through with Earth Center, and you're going back to Earth pretty soon now, as soon as they relieve you, and you can get another job there, probably teaching again.*

But darn Reagan, just the same. He'd been my student at Earth City Poly, and I'd got him this Placet job and it was a good one for a youngster his age, assistant administrator of a planet with nearly a thousand population. For that matter, my job was a good one for a man *my* age — I'm only thirty-one myself. An excellent job, except that you couldn't put up a building that wouldn't fall down again and—*Quit crabbing,* I told myself; *you're through with it now. Back to Earth and a teaching job again. Forget it.*

I was tired. I put my head on my arms on top of the desk, and I must have dozed off for a minute.

I looked up at the sound of footsteps coming through the doorway; they weren't Reagan's footsteps. The illusions were getting better now, I saw. It was—or appeared to be—a gorgeous redhead. It couldn't be, of course. There are a few women on Placet, mostly wives of technicians, but—

She said, "Don't you remember me, Mr. Rand?" It was a woman; her voice was a woman's voice, and a beautiful voice. Sounded vaguely familiar, too.

"Don't be silly," I said; "how can I recognize you at midper—" My eyes suddenly caught a glimpse of the clock past her shoulder, and it *was* a clock and not a funeral wreath or a cuckoo's nest, and I realized suddenly that everything else in the room was back to normal. And that meant midperiod was over, and I wasn't seeing things.

My eyes went back to the redhead. She must be real, I realized. And suddenly I knew her, although she'd changed, changed plenty. All changes were improvements, although Michaelina Witt had been a very pretty girl when she'd been in my Extraterrestrial Botany III class at Earth City Polytech four . . . no, five years ago.

She'd been pretty, then. Now she was beautiful. She was stunning. How had the teletalkies missed her? Or had they? What was she doing *here*? She must have just got off the *Ark*, but— I realized I was still gawking at her. I stood up so fast I almost fell across the desk.

"Of course I remember you, Miss Witt," I stammered. "Won't you sit down? How did you come here? Have they relaxed the no-visitors rule?"

She shook her head, smiling. "I'm not a visitor, Mr. Rand. Center advertised for a technician-secretary for you, and I tried for the job and got it. Subject to your approval, of course. I'm on probation for a month, that is."

"Wonderful," I said. It was a masterpiece of understatement. I started to elaborate on it: "Marvelous—"

There was the sound of someone clearing his throat. I looked around; Reagan was in the doorway. This time not as a blue skeleton or a two-headed monster. Just plain Reagan.

He said, "Answer to your radiotype just came." He crossed over and dropped it on my desk. I looked at it. "O.K. August 19th." it read. My momentary wild hope that they'd failed to accept my resignation went down among the widgie birds. They'd been as brief about it as I'd been.

August 19th—the next arrival of the *Ark*. They certainly weren't wasting any time—mine or theirs. Four days!

Reagan said, "I thought you'd want to know right away, Phil."

"Yeah," I told him. I glared at him.

"Thanks." With a touch of spite—or maybe more than a touch—I thought, *well, my bucko, you don't get the job, or that message would have said so; they're sending a replacement on the next shuttle of the* Ark.

But I didn't say that; the veneer of civilization was too thick. I said, "Miss Witt, I'd like you to meet—" They looked at each other and started to laugh, and I remembered. Of course, Reagan and Michaelina had both been in my botany class, as had Michaelina's twin brother, Ichabod. Only, of course, no one ever called the redheaded twins Michaelina and Ichabod. It was Mike and Ike, once you knew them.

Reagan said, "I met Mike getting off the *Ark*. I told her how to find your office, since you weren't there to do the honors."

"Thanks," I said. "Did the reinforcing bars come?"

"Guess so. They unloaded some crates. They were in a hurry to pull out again. They've gone."

I grunted.

Reagan said, "Well, I'll check the ladings. Just came to give you the radiotype; thought you'd want the good news right away."

He went out, and I glared after him. The louse. The—

Michaelina said, "Am I to start to work right away, Mr. Rand?"

I straightened out my face and managed a smile. "Of course not," I told her. "You'll want to look around the place, first. See the scenery and get acclimated. Want to stroll into the village for a drink?"

"Of course."

We strolled down the path toward the little cluster of buildings, all small, one-story, and square.

She said, "It's . . . it's nice. Feels like I'm walking on air, I'm so light. Exactly what is the gravity?"

"Point seven four," I said. "If you weigh . . . um-m, a hundred twenty pounds on Earth, you weigh about eighty-nine pounds here. And on you, it looks good."

She laughed. "Thank you, professor—Oh, that's right; you're not a professor now. Your're now my boss, and I must call you Mr. Rand.

"Unless you're willing to make it Phil, Michaelina."

"If you'd call me Mike; I detest Michaelina, almost as much as Ike hates Ichabod."

"How is Ike?"

"Fine. Has a student-instructor job at Poly, but he doesn't like it much." She looked ahead at the village. "Why so many small buildings instead of a few bigger ones?"

"Because the average life of a structure of any kind on Placet is about three weeks. And you never know when one is going to fall down—with someone inside. It's our biggest problem. All we can do is make them small and light, except the foundations, which we make as strong as possible. Thus far, nobody has been hurt seriously in the collapse of a building, for that reason, but— Did you feel that?"

"The vibration? What was it, an earthquake?"

"No," I said. "It was a flight of birds."

"What?"

I had to laugh at the expression on her face. I said, "Placet is a crazy place. A minute ago, you said you felt as though you were walking on air. Well, in a way, you are doing just exactly that. Placet is one of the rare objects in the Universe that is composed of both ordinary and *heavy* matter. Matter with a collapsed molecular structure, so heavy you couldn't lift a pebble of it. Placet has a core of that stuff; that's why this tiny planet, which has an area about twice the size of Manhattan Island, has a gravity three-quarters that of Earth. There is life—animal life, not intelligent—living on the core. There are birds, whose molecular structure is like that of the planet's core, so dense that ordinary matter is as tenuous to them as air is to us. They actually *fly* through it, as birds on Earth fly through the air. From their standpoint, we're walking on top of Placet's atmosphere."

"And the vibration of their flight under the surface makes the houses collapse?"

"Yes, and worse—they fly right through the foundations, no matter what we make them of. Any matter we can work with is just so much gas to them. They fly through iron or steel as easily as through sand or loam. I've just got a shipment of some specially tough stuff from Earth—the special alloy steel you heard me ask Reagan about—but I haven't much hope of it doing any good."

"But aren't those birds dangerous? I mean, aside from making the buildings fall down. Couldn't one get up enough momentum flying to carry it out of the ground and into the air a little way? And wouldn't it go right through anyone who happened to be there?"

"It would," I said, "but it doesn't. I

mean, they never fly closer to the surface than a few feet. Some sense seems to tell them when they're nearing the top of their 'atmosphere.' Something analogous to the supersonics a bat uses. You know, of course, how a bat can fly in utter darkness and never fly into a solid object."

"Like radar, yes."

"Like radar, yes, except a bat uses sound waves instead of radio waves. And the widgie birds must use something that works on the same principle, in reverse; turns them back a few feet before they approach what to them would be the equivalent of a vacuum. Being heavy-matter, they could no more exist or fly in air than a bird could exist or fly in a vacuum."

While we were having a cocktail apiece in the village, Michaelina mentioned her brother again She said, "Ike doesn't like teaching at all, Phil. Is there any chance at all that you could get him a job here on Placet?"

I said, "I've been badgering Earth Center for another administrative assistant. The work is increasing plenty since we've got more of the surface under cultivation. Reagan really needs help. I'll—"

Her whole face was alight with eagerness. And I remembered. I was through. I'd resigned, and Earth Center would pay as much attention to any recommendation of mine as though I were a widgie bird. I finished weakly, "I'll . . . I'll see if I can do anything about it."

She said, "Thanks—Phil." My hand was on the table beside my glass, and for a second she put hers over it. All right, it's a hackneyed metaphor to say it felt as though a high-voltage current went through me. But it did, and it was a mental shock as well as a physical one, because I realized then and there that I was head over heels. I'd fallen harder than any of Placet's buildings ever had. The thump left me breathless. I wasn't watching Michaelina's face, but from the way she pressed her hand harder against mine for a millisecond and then jerked it away as though from a flame, she must have felt a little of that current, too.

I stood up a little shakily and suggested that we walk back to headquarters.

Because the situation was completely impossible, now. Now that Center had accepted my resignation and I was without visible or invisible means of support. In a psychotic moment, I'd cooked my own goose. I wasn't even sure I could get a teaching job. Earth Center is the most powerful organization in the Universe and has a finger in every pie. If they blacklisted me—

Walking back, I let Michaelina do most of the talking; I had some heavy thinking to do. I wanted to tell her the truth—and I didn't want to.

Between monosyllabic answers, I fought it out with myself. And, finally, lost. Or won. I'd not tell her—until just before the next coming of the *Ark*. I'd pretend everything was O.K. and normal for that long, give myself that much chance to see if Michaelina would fall for me. That much of a break I'd give myself. A chance, for four days.

And then—well, if by then she'd come to feel about me the way I did about her, I'd tell her what a fool I'd been and tell her I'd like to— No, I wouldn't let her return to Earth with me, even if she wanted to, until I saw light ahead through a foggy future. All I could tell her was that if and when I had a chance of working my way up again to a decent job—and after all I was still only thirty-one and might be able to—

That sort of thing.

Reagan was waiting in my office, looking as mad as a wet hornet. He said, "Those saps at Earth Center shipping department gummed things again. Those crates of special steel—aren't."

"Aren't what?"

"Aren't anything. They're empty crates. Something went wrong with the crating machine and they never knew it."

"Are you sure that's what those crates were supposed to contain?"

"Sure I'm sure. Everything else on the order came, and the ladings specified the steel for those particular crates." He ran a hand through his tousled hair. It made him look more like an airedale than he usually does.

I grinned at him. "Maybe it's invisible steel."

"Invisible, weightless and intangible. Can *I* word the message to Center telling them about it?"

"Go as far as you like," I told him. "Wait here a minute, though. I'll show Mike where her quarters are and then I want to talk to you a minute."

I took Michaelina to the best available sleeping cabin of the cluster around headquarters. She thanked me again for trying to get Ike a job here, and I felt lower than a widgie bird's grave when I went back to my office.

"Yeah, chief?" Reagan said.

"About that message to Earth," I told him. "I mean the one I sent this morning.

I don't want you to say anything about it to Michaelina."

He chuckled. "Want to tell her yourself, huh? O.K., I'll keep my yap shut."

I said, a bit wryly, "Maybe I was foolish sending it."

"Huh?" he said. "I'm sure glad you did. Swell idea."

He went out, and I managed not to throw anything at him.

The next day was a Tuesday, if that matters. I remember it as the day I solved one of Placet's two major problems. An ironic time to do it, maybe.

I was dictating some notes on greenwort culture—Placet's importance on Earth is, of course, the fact that certain plants native to the place and which won't grow anywhere else yield derivatives that have become important to the pharmacopoeia. I was having heavy sledding because I was watching Michaelina take the notes; she'd insisted on starting work her second day on Placet.

And suddenly, out of a clear sky and out of a muggy mind, came an idea. I stopped dictating and rang for Reagon. He came in.

"Reagan," I said, "order five thousand ampoules of J-17 Conditioner. Tell 'em to rush it."

"Chief, don't you remember? We tried the stuff. Thought it might condition us to see normally in midperiod, but it didn't affect the optic nerves. We still saw screwy. It's great for conditioning people to high or low temperatures or—"

"Or long or short waking-sleeping periods," I interrupted him. "That's what I'm talking about, Reagan. Look, revolving around two suns, Placet has such short and irregular periods of light and dark that we never took them seriously. Right?"

"Sure, but—"

"But since there's no logical Placet day and night we could use, we made ourselves slaves to a sun so far away we can't see it. We use a twenty-four hour day. But midperiod occurs every twenty hours, regularly. We can use conditioner to adapt ourselves to a *twenty*-hour day—six hours sleep, twelve awake—with everybody blissfully sleeping through the period when their eyes play tricks on them. And in a darkened sleeping room so you couldn't see anything, even if you woke up. More and shorter days per year—and nobody goes psychopathic on us. Tell me what's wrong with it."

His eyes went bleak and blank and he hit his forehead a resounding whack with the palm of his hand.

He said, "Too simple, that's what's wrong with it. So darned simple only a genius could see it. For two years I've been going slowly nuts and the answer so easy nobody could see it. I'll put the order in right away."

He started out and then turned back. "Now how do we keep the buildings up? Quick, while you're fey or whatever you are."

I laughed. I said, "Why not try that invisible steel of yours in the empty crates?"

He said, "Nuts," and closed the door.

And the next day was a Wednesday and I knocked off work and took Michaelina on a walking tour around Placet. Once around is just a nice day's hike. But with Michaelina Witt, any day's hike would be a nice day's hike. Except, of course, that I knew I had only one more full day to spend with her. The world would end on Friday.

Tomorrow the *Ark* would leave Earth, with the shipment of conditioner that would solve one of our problems—and with whomever Earth Center was sending to take my place. It would warp through space to a point a safe distance outside the Argyle I.-II. system and come in on rocket power from there. It would be here Friday, and I'd go back with it. But I tried not to think about that.

I pretty well managed to forget it until we got back to headquarters and Reagan met me with a grin that split his homely mug into horizontal halves. He said, "Chief, you did it."

"Swell," I said. "I did what?"

"Gave me the answer what to use for reinforcing foundations. You solved the problem."

"Yeah?" I said.

"Yeah. Didn't he Mike?"

Michaelina looked as puzzled as I must have. She said, "He was kidding. He said to use the stuff in the empty crates, didn't he?"

Reagan grinned again. "He just thought he was kidding. That's what we're going to use from now on. Nothing. Look, chief, it's like the conditioner—so simple we never thought of it. Until you told me to use what was in the empty crates, and I got to thinking it over."

I stood thinking a moment myself, and then I did what Reagan had done the day before—hit myself a whack on the forehead with the heel of my palm.

Michaelina still looked puzzled.

"Hollow foundations," I told her. "What's the one thing widgie birds won't

fly through? *Air*. We can make buildings as big as we need them, now. For foundations, we sink double walls with a wide air space between. We can—"

I stopped, because it wasn't "we" any more. *They* could do it after I was back on Earth looking for a job.

And Thursday went and Friday came.

I was working, up till the last minute, because it was the easiest thing to do. With Reagan and Michaelina helping me, I was making out material lists for our new construction projects. First, a three-story building of about forty rooms for a headquarters building.

We were working fast, because it would be midperiod shortly, and you can't do paper work when you can't read and can write only by feel.

But my mind was on the *Ark*. I picked up the phone and called the radiotype shack to ask about it.

"Just got a call from them," said the operator. "They've warped in, but not close enough to land before midperiod. They'll land right after."

"O.K.," I said, abandoning the hope that they'd be a day late.

I got up and walked to the window. We were nearing midposition, all right. Up in the sky to the north I could see Placet coming toward us.

"Mike," I said, "Come here."

She joined me at the window and we stood there, watching. My arm was around her. I don't remember putting it there, but I didn't take it away, and she didn't move.

Behind us, Reagan cleared his throat. He said, "I'll give this much of the list to the operator. He can get it on the ether right after midperiod." He went out and shut the door behind him.

Michaelina seemed to move a little closer. We were both looking out the window at Placet rushing toward us. She said, "Beautiful, isn't it, Phil?"

"Yes," I said. But I turned, and I was looking at her face as I said it. Then—I hadn't meant to—I kissed her.

I went back, and sat down at my desk. She said, "Phil, what's the matter? You haven't got a wife and six kids hidden away somewhere, or something, have you? You were single when I had a crush on you at Earth Polytech— and I waited five years to get over it and didn't, and finally wangled a job on Placet just to— Do I have to do the proposing?"

I groaned. I didn't look at her. I said, "Mike, I'm nuts about you. But—just before you came, I sent a two-word radiotype to Earth. It said, 'I quit.' So I've got to leave Placet on this shuttle of the *Ark*, and I doubt if I can even get a teaching job, now that I've got Earth Center down on me, and—"

She said, "But, Phil!" and took a step toward me.

There was a knock on the door, Reagan's knock. I was glad, for once, of the interruption. I called out for him to come in, and he opened the door.

He said, "You told Mike yet, chief?"

I nodded, glumly.

Reagan grinned. "Good," he said; "I've been busting to tell her. It'll be swell to see Ike again."

"Huh?" I said. "Ike who?"

Reagan's grin faded. He said, "Phil, are you slipping, or something? Don't you remember giving me the answer to that Earth Center radiotype four days ago, just before Mike got here?"

I stared at him with my mouth open. I hadn't even read that radiotype, let alone answer it. Had Reagan gone psychopathic, or had I? I remembered shoving it in the drawer of my desk. I jerked open the drawer and pulled it out. My hand shook a little as I read it.

REQUEST FOR ADDITIONAL ASSISTANT GRANTED. WHOM DO YOU WANT FOR THE JOB?

I looked up at Reagan again. I said, "You're trying to tell me I sent an answer to this?"

He looked as dumbfounded as I felt.

"You told me to," he said.

"What did I tell you to send?"

"Ike Witt." He stared at me. "Chief, are you feeling all right?"

I felt so all right something seemed to explode in my head. I stood up and started for Michaelina. I said, "Mike, will you marry me?" I got my arms around her, just in time, before midperiod closed down on us, so I couldn't see what she looked like, and vice versa. But over her shoulder I could see what must be Reagan. I said, "Get out of here, you ape," and I spoke quite literally because that's exactly what he appeared to be. A bright yellow ape.

The floor was shaking under my feet, but other things were happening to me, too, and I didn't realize what the shaking mean until the ape turned back and yelled, "A flight of birds going under us, chief! Get out quick, before—"

But that was as far as he got before the house fell down around us and the tin roof hit my head and knocked me out. Placet is a crazy place. I like it.

N Day

By PHILIP LATHAM

There have been many tales of the terror and riots that precede the end of the Earth, when some scientist accurately predicts its doom. But now let's see—would men react quite that way . . . ?

Tuesday, 1949, January 18.

SUNSPOT maximum and three days without a single spot!

This cycle is certainly developing in a peculiar way. From the last minimum about March, 1944, sunspot activity jumped to a Wolf Number of 252 in December, 1948, the highest index on record since that rather dubious maximum back in 1778. But this month spots have simply failed to appear, as completely as if someone inside the sun had pulled a switch.

Clarke's elaborate empirical analysis has failed utterly to predict. I am now more firmly convinced than ever that no combination of harmonics can ever represent the approximate eleven-year rise and fall in the number of sunspots. Instead I favor Halm's oild idea that each cycle is a separate outburst in itself. The very fact that our star is a weak variable means it is to be a certain degree unstable. Not unstable to the extent of a Cepheid variable but still—unstable. Indeed, Halm's hypothesis appeals to me more strongly now than when he announced it four cycles ago.

There I go measuring my life in sunspot cycles again! But four cycles *does* sound much less than forty-four years. Yet how little more I know about the sun than when I first came to Western Tech. In many ways the sun reminds me of a woman: just when you think your are beginning to understand her, invariably she will fool you. Enough of that. What business does an old bachelor have writing such things in his diary?

The driving clock on the coelostat was out of commission again today but I will have to repair it somehow. President Bixby refused my request for three hundred seventy-five dollars on the grounds that the budget was already over the limit. I notice, however, that others seem to have no trouble securing large allotments.

Until some spots show up I suppose I can best employ my time testing those new Eastman IV-K plates that arrived today.

Evening.

When I wrote this morning that the sun invariably does the unexpected, I had no idea my words would be so soon fulfilled.

Spent an hour this afternoon taking test plates on the solar spectrum in the yellow and orange. Imagine my astonishment upon examining one of the plates with an eyepiece to see the D3 line of neutral helium. Of course, D3 often shows above active sunspots, but I believe this is the first case of its appearance over a calm undisturbed region. Smedley would probably know about this but I dread to ask him. I know he regards me as an old fossil, and this would only be further proof of my growing senility. How different was my own attitude when I was a young instructor!

The weather looked threatening at sunset but when I stepped out on the platform just now the sky was clear. The valley five thousand feet above was a carpet of lights from downtown Los Angeles to Santa Monica. Better drive down for a haircut and fresh pipe tobacco soon—my two-weeks supply is nearly gone. I really shouldn't stay on the mountain so long at a time. Too much solitude is as bad for the mind as too much inbreeding is bad for the race.

Besides, I absolutely must get started on the notes Marley left behind. Publication of such valuable material should not be so long delayed.

Wednesday, Janauary 19.

The long quiescent spell in solar activity is broken at last, and how it was broken!

An enormous spot is coming around the east limb, that should be an easy

naked-eye object within a few days. Unable to get magnetic classification but feel sure from general appearance must be a gamma. Radio and television stations beware. They will be in for pleny of trouble soon.

After the two direct shots of the sun, I switched the beam over for a look through the polarizing monochromator, Just in time to catch a splendid surge. Near the big spot the sun was swollen up like a boil. Suddenly a long arm emerged from the protuberance moving at a velocity I estimated at one hundred fifty miles per second. After reaching out to about sixty thousand miles the filament paused uncertainly. Then it was withdrawn, as suddenly as it emerged.

So often the sun conveys the feeling of life. At times it is like a sleeping monster, sluggish, dormant; at others, alive and tense, like a tiger crouched to spring.

Thursday, January 20.

In addition to the spot-group that came around the limb yesterday, a fast-growing spot had broken out in heliographic latitude 42 N. This is the farthest I have ever seen a spot from the solar equator. Maunder at Greenwich speaks of "faint flecks" as high as latitude 72 but this is a large vigorous spot with a magnetic field of 2000 gauss.

If the face of the sun is a strange sight when viewed directly, it is as nothing compared to its appearance when analyzed by the spectroscope. At 18 hours GCT photographed a broad bright wing projecting from the violet side of the red hydrogen line, presumably due to a streamer of gas spurting from the solar surface with a speed of around four hundred miles per second.

Not so spectacular but much harder to believe, was the discovery of a faint bright line in the blue. Yesterday I expressed my surprise at finding 5875, the yellow line of neutral helium, in the sun. Today I was positively shocked when I discovered that 4686 of ionized helium also showed faintly.

I wonder if I should send a wire to Harvard? But I hesitate to take such a step. Perhaps I should check with Mount Wilson first. Yes, I will see if they have observed anything unusual. I hate to consult with Smedley on anything. How I wish Marley were here. He was always so sympathetic and understanding.

Friday, January 21.

Apparently I am the only astronomer who has gotten a look at the sun recently.

Talked with Mount Wilson office in Pasadena this morning. They said there is feet of snow on the mountain with the power line out, and the road blocked by slides and boulders. The Atlantic coast reports storms all the way from Jacksonville to Montreal. And in Europe the tense political situation has paralyzed scientific research.

Saturday, January 22.

After clouds put a stop to observations last Thursday, I drove down to the campus for a look at Marley's notes. I found the box in my office where it had come all the way from Dunedin, New Zealand.

What a great observer Marley was. And what a lucky observer! Three years in the southern hemisphere and three novae so far south he was the only one to get a complete photographic record. To think I had the same opportunity and turned it down. But somehow I was afraid to leave the old observatory here and venture into strange surroundings.

Marley was one of the most uncommunicative men I have ever known. Whenever he had anything to say he said it in his notebook. Taking notes got to be a habit with him, just as keeping a diary is with me. He kept his notes on special forms which he had printed for that purpose and later bound them in the black leather.

Exploring the contents of the packing box was sad business. Here was the sum total of a man's life work—a dozen leatherbound volumes, some reprints of his published papers, a box of plates taken at the coudé focus of the 60-inch, a worn account book, a few old letters and pictures. I feel guilty going through a man's personal effects in this way, but that was Marley's last wish.

Those sunspots are wrecking our communication systems. Traders went wild the other morning when stock market quotations came in all garbled up. For a while U.S. Steel was selling at 269 and Johns-Manville Corporation at 2¼.

Astronomy in Wall Street—it can happen!

Sunday, January 23.

More clouds and more desk work.

Preparing Marley's notes for publication in the *Astrophysical Journal* has not been so dull as I supposed. It begins to look as if he observed far more than any of us ever suspected; more than anyone has ever observed before him. Ap-

parently he got on the trail of one of the biggest problems in astrophysics—the spectrum of a nova *before* the outburst.

One of the essential characteristics of novae is that they all go through practically the same identical changes, but at quite different rates. That is, some novae run through their life history much faster than others. The changes themselves are so familiar, however, that an expert can take one look at the spectrum of a nova and accurately predict its behavior in the future.

We have many long series of observations on novae *after* the outburst. The one section of their life history that is still blank is the pre-maximum stage. Since novae arise from stars that were originally faint and inconspicuous, it is only by accident that we know anything about them before the explosion occurred. But it seems reasonable to suppose that a star must give *some* indication of the approaching cataclysm in advance, so that disruption could be predicted long beforehand—if only these symptoms could be observed and recognized.

Somehow or other this was precisely what Marley had been able to do. Thus on March 7, 1948, writing of Nova Muscae, he says: "The spectral changes a star exhibits in the pre-maximum stage are so well-marked that I now have no hesitation in predicting not merely the day but the very hour of outburst. These changes are identical although proceeding at vastly different rates for various types of novae. For example, a 'flash' nova, such as N Puppis 1942, might pass through a series of changes in a week, that would be prolonged for months in the case of a 'slow' nova like N Pictoris 1925."

Surely an observer as astute as George Lambert Marley would never have committed himself to such a statement unless he had the necessary and sufficient proof to convince a dozen men.

After poring over his notes till midnight I stepped outside the office to check the weather. Fog was drifting in from the ocean but the sky was still clear in the northeast. At first I thought a forest fire had broken out behind the San Gabriel mountains, for the whole heavens in that direction were suffused with a dull crimson glow. Then I realized it was an aurora, the finest I had seen since 1917. It was the type classified by the International Geophysical Union as *diffuse luminous surfaces* (DS), which often follow intense displays of rays and curtains.

The red glow soon faded away, but long after it was gone the impression it created remained, leaving me uneasy and restless, so that sleep did not come till nearly dawn.

Monday, January 24

The clouds began to break about eleven o'clock this a.m., causing me to jump in the car and get back to the Observatory full speed ahead. I climbed to the top of the sun tower as fast as my bronchitis would let me, set the mirrors, and hastened down to the spectrograph, arriving badly winded.

My first glimpse of the sun was a revelation. The high latitude northern spot has grown until there surely has never been a spot like it before. The excoriated area resembles not so much a sunspot as a great open wound in the solar surface; a region where the white skin of the photosphere has been peeled aside revealing the dark flesh of the umbra beneath.

While I was focusing the image—for the seeing was pretty bad—suddenly a cluster of points within the spot-group began to blaze like diamonds, becoming so intensely brilliant that I was momentarily dazzled. For fully ten seconds I must have stood there dumbly before I appreciated the significance of the phenomenon. It was a repetition of the effect Carrington had witnessed way back in 1859—the only known case of a so-called solar "flare" becoming directly visible on the surface of the sun.

Like Carrington, at first I was too startled to behave rationally. What to do? Should I try to photograph the spectrum of the luminous points? But I hesitated fearing they might be gone before I could load a plate holder and make an exposure. Finally, goading myself into some kind of action, I grabbed an eyepiece and began examining the solar spectrum visually, checking on the appearance of the different lines as best I could by eye.

As I expected, the hydrogen lines were so bright over the flares that they actually sparkled. In fact, the whole Balmer series was lit up, from H alpha in the red to H epsilon in the violet. H beta glittered like Vega on a clear frosty night. Bright lines of ionized metals, chiefly iron and titanium, were also visible. Wholly unexpected were two strong bright lines gleaming in the green and red. Although unable to measure their positions closely I am convinced in

my own mind of their identity. They are 5303 of Fe XIV and 6374 of Fe X—lines previously observed only in the corona and a few novae.

Upon beholding these lines I went nearly wild. I was now determined to get a photograph at all costs. Rushing into the darkroom I tore the wrapper off a fresh box of plates, loaded the plate holder, and was outside again in less than three minutes. But alas!—clouds were racing over the image of the sun blotting out the flares almost completely. Nevertheless, I clamped in the plate holder and pulled the slide, praying for five minutes of clear sky which was all the exposure time I needed. But instead of getting better the clouds grew thicker, and before I knew it rain was splattering down on top of the spectrograph, forcing me to close the dome in a hurry.

What an opportunity I missed! The second time in a century this effect has been seen and I failed to get a single permanent record. I hope Smedley never hears of this.

Wednesday, January 26

I have just telegraphed the Harvard College Observatory. Although fearful to release a message of such sensational import, I felt that the information in my possession should no longer be withheld.

After failing to get a photograph of the coronal lines, the weather looked so bad that I decided to drive down to the office and continue work on Marley's notes. After the statement I found on Sunday night, I felt sure he must have left a complete account of the pre-maximum stage behind. But he failed to mention the matter further, seeming to be more concerned with improving the transmission of his spectrograph than with stellar instability.

I went through one leather bound volume after another until the entire set was exhausted, and nothing remained but some letters and an old account book. The latter I had already passed by several times, as unlikely to contain anything more scientific than Marley's laundry bills or his losses at bridge. Yet it was in this very book that Marley had entrusted his most valuable data, on the old principle of "The Purloined Letter," that people seldom look in the obvious place. These data might easily have been discovered accidentally if kept in his regular notebooks, but it was highly improbable that anyone would give a second place to a cheap account book.

The first page bore the caption, "Course of Events in Galactic Novae." Underneath he had written: "Once instability has definitely developed in a star the series of events as described herein is invariable, although proceeding at different rates. The rate of development, D, may be calculated for any particular date of outburst, N, by the formula, $\log N = \log Rh/c - 3 \log D$. On the next page Marley had given the values of the constants together with a table from which log D could be interpolated. The parameter, D, seemed to be a function of several variables the meaning of which was not clear. But there was no ambiguity about how to use D itself.

The rest of the pages were ruled into three columns each. The first was labeled DATE, and bore such entries as $N-12$, $N-11$, . . . N, $N+1$, et cetera. The second column contained the predicted appearance of the nova's spectrum, while the third evidently referred to how well the predictions agreed with observations. Obviously agreement was excellent in most cases, for generally there was simply a check mark, with perhaps some such comment as, "nebular lines exceptionally strong," or "4640 stage rather late," et cetera.

At the end of the series Marley had written the Greek letter capital Mu with a flourish. This was Marley's astronomical signature, analogous to Herschel's famous H, and Otto Struve's Omicron Sigma. I happened to know it also meant Marley was satisfied with this piece of work and that it was ready for publication—an unexpected bit of luck for me.

Turning through the leaves and marveling at the wealth of material at my fingertips, I began to be aware of something vaguely familiar about certain of the entries. They followed a pattern that I recognized without being able to identify. Thus near the beginning of the series there were such notations as, "First appearance of He I," or "Bright wings violet side of hydrogen lines," and "4686 of He II faintly visible." It was the remark on page 4 that finally penetrated. "These early stages cannot always be discerned with absolute assurance; indeed, from my observations on T Pysidis and T Coronae Borealis, it appears that a star may exhibit all the foregoing symptoms of instability without necessarily exploding. *The first sure sign is the appearance of the green and red coronal lines. These constitute proof positive that the star will proceed to outburst as a flash nova.*" The italics are Marley's.

I'll admit that after reading this I was

badly shaken. The inference was unmistakable. Something had gone wrong within the sun. Instability instead of manifesting itself by the usual harmless eleven-year rise and fall in sunspot activity, had been much more serious in the present cycle. Beginning as far back as 1945 or '46, some break or dislocation had occurred far below the surface. Insignificant at first, disruption had gradually spread, releasing stores of latent energy previously untapped within the atom. This latent energy had now built up until the first signs were becoming evident, the warning signals that disruption was close at hand.

No wonder the sunspot cycle had developed in a peculiar way! No wonder mammoth spots were breaking out in high latitudes. No wonder high temperature lines of helium were beginning to blaze in the solar spectrum!

How long?

Marley had given a little formula from which the rate of development could be calculated. To find the day of outburst it was only necessary to substitute the appropriate value of log D from his table and solve for the corresponding value of N.

Dreading to know the answer, yet impelled by a fascination I could not resist, I went to work. Let's see, the coronal lines had appeared on day N—53, which in Marley's notation made log D equal to -8.7654. R was the radius of the sun in centimeters, h was Planck's constant, a c was the velocity of light.

I began taking the numbers out of a log table with trembling hands. So great was my agitation that I was compelled to repeat the calculation several times. Adding up the figures I could not suppress a cry of despair. Log N was 0.4774. Barely three days—seventy-two hours left. Next Saturday at the latest.

Frantically I went back through the notes, searching for some loophole, some hint that might invalidate the whole proceeding. Like a lunatic repeating the same act over and over again. I must have calculated the value of N a dozen times. I carried the figures out to a ridiculous number of decimals. Always the result was the same. Three days—seventy-two hours. Less than that now!

At daybreak I tossed the calculations into the wastebasket and brewed myself a pot of coffee in the electric percolator I keep at the office. While it was boiling I composed the following message to Harvard:

5875 HE I OBSERVED INTEGRATED LIGHT CENTER OF SUN JANUARY 18. 4686 HE II OBSERVED IN EMISSION JANUARY 20. CORONAL LINES 5303 and 6374 SEEN OVER SPOT GROUP AT 57 WEST 42 NORTH JANUARY 24. SOLAR PHENOMENA CLOSELY FOLLOWING PATTERN DESCRIBED BY MARLEY UNPUBLISHED MATERIAL ON NOVA CIRCINAE 1947, NOVA MUSCAE 1947, NOVA ARAE 1948.

PHILIP LATHAM.

After telephoning the message to Western Union I read it over again with considerable satisfaction. Certainly no one can accuse me of exaggeration or sensationalism. I have stated the facts and nothing more.

Evening, January 27.

Well, the cat is out of the bag.

This afternoon while measuring a plate of N Circinae taken at the Cassegrain spectrograph there came an authoritative knock at the door. Peering outside I discovered two young men, one of whom carried a camera and tripod. They introduced themselves as a reporter and photographer from the morning *Chronicle*. It seems that a flash had come in over the teletype about my wire to Harvard and they had been sent out to investigate. When I expressed astonishment that my wire had reached the press they had a ready explanation. Scientific news has become so important since the war that men are especially trained to handle events of this kind. Naturally they keep a close watch on the Harvard College Observatory, which acts as the clearing house for astronomical discoveries. The result was that as soon as my message was received it was immediately rewritten in popular terms and released over the wires of Science Associated.

I was reluctant to talk at first, but the young man was very persuasive, and before I knew it I was telling far more than I ever intended. I began cautiously enough, emphasizing the importance of Marley's brilliant work at Dunedin and minimizing my own efforts. I presume that reporters eventually grow extremely expert at drawing people out for it was certainly true in my case. After the reporter had filled several pages, the photographer got me to pose for several pictures, peering into the eyepiece of the measuring machine, examining a celestial globe as if I were an astrologer, et cetera. I felt perfectly ridiculous, but whenever I

started to protest they brushed my objections aside, so that I found myself meekly submitting to whatever they wished. The session lasted for fully an hour, and when it was over I felt as exhausted as if I had given half a dozen lectures.

Then just as the men from the *Chronicle* were leaving a couple more arrived from the *Dispatch*. This time I really endeavored to refuse them admittance, objecting quite vehemently to this invasion of my privacy. But they were so insistent, claiming that since I had given the *Chronicle* a statement it would be unfair not to do the same for them, that at length I relented. Besides, they said, if they returned to the office empty-handed, they might lose their jobs. So to my intense chagrin I had to go through the whole performance again.

Since they left about an hour ago I have had time to think it all over and I feel terribly upset. The reclusive life of a professor of astronomy is surely a poor preparation for solving the harsh problems of human existence. Whenever I have to face men outside the university I feel so helpless, almost like a child.

I see so clearly that I should have politely but firmly refused them admittance right from the start. If I could only assert myself, take a firm stand and then stick to it. Now there is no telling where this may end. Worst of all, there is not the slightest excuse for me. Not the slightest excuse in the world.

I am thoroughly aware of the official attitude here toward sensational newspaper publicity for members of the faculty. A professor over in the Economics Department was recently compelled to resign, his whole career ruined, because of a story that he gave out to one of the picture magazines. Next year I will reach the age of retirement of sixty-seven, but had hoped to continue some investigations I had started at the Observatory, as well as picking up a little pocket money teaching Astronomy 1 in summer session. But, if the statements I just issued arouse adverse criticism, my petition for post-retirement work will almost certainly be denied.

Once I nearly screwed up sufficient courage to call the papers and forbid them to use the story. But I didn't know how to explain myself adequately over the phone, and besides it might result in making matters even worse. The more I turned the situation over in my mind the more deplorable it seemed. I would be held up to ridicule, might be compelled to resign. I had served the institution to the best of my ability for four decades, only to end my career in humiliation and disgrace.

Midnight

Sitting in the gathering dusk a few hours ago my heart filled with despair, an idea began filtering through my consciousness; an idea so simple and obvious that it had escaped me completely.

If the world were coming to an end, what difference could anything possibly make?

It required considerable time for my mind to grasp that elementary fact clearly and firmly. When it did the impact was terrific. For the first time I felt free. The sensation was glorious—like being born again.

Going back over the years it seemed to me I had always been afraid of something. I had always been too timid to assert myself, too fainthearted to assume my rightful position in the world. How often I had seen other men less capable move on ahead, become big research men or executives, while I was content to remain obscurely in the background.

I thought of how many other people there must be like myself who live continually in fear. Fear of the unknown, fear of the future, fear of losing their job, fear of dying of cancer, fear of a helpless old age—

Now that was behind me. I felt like a character in a play, moving and speaking according to the author's will, oblivious to those around him. Life was going to be extremely simple.

Thoroughly tired and relaxed, I stretched out on the cot by the measuring machine, and fell immediately into a profound dreamless slumber.

The ringing of the telephone awakened me. For several seconds I listened without realizing where I was or what had happened to me. Then it all came back, the end of the world, no need to worry any more, et cetera.

"Hello," I grunted.

"Is that you, Latham?" It was Smedley calling, the young man who had recently been appointed instructor in astronomy.

"Yes."

"Well, I've been trying everywhere to find you," he complained. "You weren't at your apartment or the Observatory."

"Maybe that was because I was asleep here at the office."

"What was that?"

"I said MAYBE IT WAS BECAUSE I WAS ASLEEP HERE AT THE OFFICE!"

"Oh!" he exclaimed. He sounded slightly startled. "Then you didn't hear the ten o'clock news broadcast over KQX?"

"No, I didn't hear it."

"It was mostly about you," he chuckled. "I've heard some awful stuff over the radio but this takes the prize. Can't imagine how they could have gotten hold of such a story. Something about the sun turning into a fast nova."

"Possibly they got it because I gave it to them."

"You what!"

"Listen, Smedley: if I was quoted to the effect that the world is coming to an end then I was quoted correctly. That's exactly what I said and that's exactly what I meant."

"You aren't serious?"

"I was never more serious in my life."

He hesitated. "All right, Dr. Latham. I'm sorry to have disturbed you," and he hung up.

I have just figured up that there are less than forty-seven hours left now.

Friday morning, January 28

Catherine Snodgrass, president Bixby's secretary and one of the minor fuehrers at Western Tech, called me early this morning as I was finishing a pot of coffee and reading "Of Human Bondage." As usual, she was very definite and positive.

"President Bixby has arranged an appointment for you at ten o'clock," she informed me. "If you will stop at my desk, I will see that you are admitted without delay."

"Sorry," I said, "but I can't make it at ten."

"I beg your pardon."

People seemed to have trouble in understanding me lately. "I said I can't be there at ten. Tell Bixby I'll be there at eleven instead."

"The president is very anxious to see you. I would suggest that you come at ten," she said quietly.

"Sorry. Can't come till eleven."

There was a long silence pregnant with meaning. "Very well, Dr. Latham, I will tell him. Thank you."

There was no reason why I couldn't come at one time as well as another, except that I was seized with a perverse desire to frustrate the local hierarchy. I poured myself a fourth cup of coffee and went back to reading "Of Human Bondage," a novel I had been trying to finish for five years.

I had reached the part where Mildred is being particularly spiteful and was so absorved that eleven o'clock came before I knew it. Previously I would have been sitting on the edge of a chair in the reception room ten minutes before time, but now I sauntered slowly over to the Administration Building.

Bixby was talking into a dictaphone when I came in. He is a large powerfully built man, with strong prominent features, and a crisp white mustache. Hair graying slightly at the temples. Most common remark heard about him is that he looks more like an international banker than a professor. It has been said that to be a successful college president, a man must have the digestion of a billy goat, the hide of a rhinoceros, and the money-getting powers of a secretary of the treasury. There could be no denying that as head of Western Tech, Bixby was an outstanding success.

He lost no time getting down to business.

"I believe I can say without fear or hesitation that no one has more vigorously championed the cause of academic freedom than myself. A scientist to be great must be free, at liberty to carry the bright torch of knowledge wherever nature beckons. These are truths upon which I am sure we are all agreed."

I nodded assent.

"At the same time," he said clearing his throat, "we should be circumspect. In our relations with the man in the street, we must neither depict science as magic nor scientists as magicians, making stupendous discoveries. Otherwise the results of our labors are liable to serious misinterpretation by the ignorant and superstitious."

He frowned at me through his rimless glasses. "Dr. Latham, I feel very strongly that your message should have been submitted to the faculty committee on announcements before sending to Harvard."

He paused, evidently expecting me to say something in my defense at this point, but as I could think of no suitable rejoinder, remained silent.

"Now, Latham," Bixby continued not unkindly, "I am familiar with your long and distinguished career here at Tech. Personally, I do not doubt for an instant that you had not the slightest intention of deliberately seeking sensational publicity. Unfortunately, the harm is done; the die is cast. The institution will be harshly criticized and justly so. Why, several big endowments I had been

counting on may be held up if this thing gets out of control."

He got up and began pacing back and forth across the office. Suddenly he turned and confronted me.

"You spend a lot of time at the Observatory, don't you?"

"Yes," I replied, "my teaching duties have been very light in recent years."

"Often up there for days and weeks at a time?"

"That's true," I admitted.

"Just as I thought," he said. "You know, the man most likely to get his feet off the ground is the man who works alone. We need the contact of others to keep us on the straight path. Even the very best go off the deep end occasionally. If I remember correctly, Kepler was something of a mystic. Herschel thought the sun was inhabited. Sir Isaac Newton had a theory about light particles having fits." He stopped uncertainly.

I finished it for him. "And Philip Latham, associate professor of astronomy, thinks the world is coming to an end. It does sound kind of crazy, doesn't it?"

He looked down at me and smiled. "Yes, Latham, to put it bluntly, it does sound kind of crazy. Glad you see it that way."

He reached across the desk for pencil and paper. "Here. Suppose you write out something for the papers. No elaborate explanation, you understand; just anything to satisfy the reporters and calm down the people. Something about how new observations have caused you to revise your statement of yesterday, the sun is O.K., and looks good for another million years yet."

He went around to the opposite side of the desk and began arranging some papers together and laying them in metal containers. "While you're doing that I'll have Kit—Miss Snodgrass—call the press and issue a statement. Kill this thing right away."

I shook my head. "I am not aware of any new observational evidence," I said. "My statement yesterday still stands."

"What's that?" Bixby said absently, continuing to arrange the papers.

"I said I have no intention of retracting my statement."

Bixby stopped suddenly as if unable to believe his ears. Then he walked slowly around the side of the desk looming larger and larger, until he towered above me so high I felt like an ant. For an instant I thought he intended bodily violence. But when he spoke it was in a low tone, choosing his words very slowly and carefully.

"There's something I haven't told you yet. Neither the board of trustees nor the regents know anything about it. Nobody knows about it but myself." His voice sank nearly to a whisper. "There's a good chance of getting three million dollars out of Irwin Mills, the publisher, for a new observatory. Wants to establish it as a memorial to his son who died in the war." He leaned forward impressively. "How would you like to be the director of that new observatory?"

"It's a dream I've had for fifteen years."

Bixby slammed his fist into the palm of his hand. "Exactly!" he said. "We've been needing a new telescope around here for a long time. Present equipment in pretty bad shape. But here's the point: we won't get a nickel out of Mills if this wild story builds up. He'll think we're a bunch of screwballs and pull out on us. We can't always get things just the way we want them. A man's got to be reasonable—practical."

"That's what I'm trying to be—practical," I told him, "although not that it makes much difference any more."

I decided I might as well give it to him straight.

"You see it's really true, this wild story about the world coming to an end. As kids we read stories about the end of the world and all the different ways it could happen. But they were just words on a piece of paper born out of somebody's imagination. This is the real thing. Of course, you can't believe it. I can't actually believe it myself. We're all too engrossed in our own affairs, too colossally conceited, to believe that anything from outside could conceivably destroy the little world we have created for our special enjoyment and torment.

"That's the way it is," I said. "I'm afraid nothing we can do is likely to change the situation."

Bixby had remained impassive while I was speaking. Now he walked slowly to his desk and sat down.

"Then you refuse to co-operate." He said it more to himself than to me.

I shrugged. "Put it that way if you like."

"This can ruin us. Ruin me and the whole institution." He was studying me curiously, as if he had never really seen me before, and had just become aware of my existence.

"You're mad," he said dully.

I left him sitting there hunched over

the top of his desk. For the first time I noticed how old and gray he looked.

At the office I found the postman had left a stack of letters for me. As I seldom receive mail, except copies of the *Scientific Monthly* and the *Astrophysical Journal,* I opened the envelopes with considerable interest. They were from people who had heard about me over the radio, and felt impelled to take their pen in hand immediately.

Some of the letters were hardly more than scrawls written on the back of old grocery bills and wrapping paper. Others were neatly typed on fine stationery with impressive letterheads, such as Institute of Psychoelectrical Research, or Bureau of Cosmic Power and Light. Several writers inclosed pamphlets expounding their views in detail. Through them all ran the same theme. *I* have discovered the secret of the universe. *I* have refuted Newton's law of gravitation. *I* have found the law that explains the secret of the moon, sun, and stars. Three correspondents attacked me violently for trying to anticipate their own predictions of the end of the world.

I wondered why victims of paranoia with delusions of grandeur so often find in astronomy the outlet which their minds are seeking? Every professional astronomer receives such letters. I know a director of a large observatory who has been getting letters from an inmate of an asylum for years. It is useless to attempt to point out the fallacies in their highly systematized delusions. That is the worst trouble with these people, I reflected. They are the last ones to see anything strange in their actions.

Tossing the letters aside I reviewed the events of the morning. I admit I could not suppress a feeling of elation at my triumph over Bixby. Once I would have been utterly crushed by his tirade. Now it left me quite unmoved. What a surprise was in store for him tomorrow! I started to laugh out loud, then checked myself barely in time.

A psychiatrist had once told me that only the insane laugh out loud—alone.

Midnight.

By evening my sense of elation had fled leaving in its wake a sense of deep depression. At the same time I was filled with a strange uneasiness which made my apartment seem intolerable. Ordinarily I avoid people, having a dread of crowds that amounts almost to a phobia. But tonight the thought of human companionship was very welcome. I decided to get the car out and drive down to Hollywood.

I found a place to park on Hollywood and Vine near the El Capitan Theater. Stopping at the newsstand on the corner I bought a morning edition of the *Chronicle,* which I thought should have my story by this time. Sure enough, there it was on the front page of the second edition. OLD SOL SET FOR BLOWUP! the caption read. Underneath was the subhead, World's End Due Saturday, says Dr. Latham of W.I.T.

Naturally I had assumed that nothing could compete with the end of the world for news interest. Yet I found my story was overshadowed by an account of a shooting that had occurred on the Sunset strip, which occupied practically all the rest of the page. Worse still, my photograph was displayed next to the principal in the shooting, a blond young woman in a playsuit. Anyone casually glancing at the paper would have gotten the impression that I was also concerned in the affair.

It seemed to me that all the stories I had ever read about the end of the world had been so different from the way this was turning out. In the stories there had always been wild tumult as the final hour drew near, half the people indulging in a frenzied orgy of pleasure while the other half offered up fervent prayers for deliverance. My prediction of the end of the world had now been broadcast over the radio dozens of times and widely publicized in the papers. Yet the only signs of tumult I could see were at the Chinese Theater up the street, where a premiere was trying to get under way.

Suppose, I said to myself, that I were to seize that young man there by the arm and try to explain to him I believed the end of the world was near. What evidence could I produce to prove my assertion?

I could tell him of observations made with my own eyes.

He would say I was lying; refuse to believe me.

I could show him Marley's notes.

They would be meaningless to him. A mere jumble of words and symbols scrawled in an old account book.

Finally, I could produce actual photographs of the spectrum lines.

Nothing but chance agglomerations of silver grains on a gelatin emulsion.

He would brush me impatiently aside, dismiss my story as fantastic, the product of too much port wine and brandy. Suppose I drank myself into uncon-

sciousness tonight. Would I awaken tomorrow to find the same old GO star shining as usual, radiating energy at the rate of 1.94 calories per square centimeter per minute?

Driving up the winding road to the Observatory late that evening I determined upon my course of action next day. Writing it down here will serve to fix it in my mind.

The time of outburst based upon Marley's formula is 16:12 Pacific Standard Time, which is about an hour and a half before sunset at this time of year. If the cloud of gas expands at the average rate of six hundred miles per second, it will not reach the Earth's orbit for nearly two days. The intense heat pouring from the sun, however, as a result of the explosion will travel with the speed of light and probably render the daylight side of Earth scorching hot within a very few minutes. At any rate, after I detect the first signs of disruption in the monochromator there should be sufficient time for me to inclose this diary in a heat-resistant box and store it at the bottom of the suntower two hundred feet below ground.

Is it insane to hope that this diary will by some miracle be spared? Only too well I realize the futility of taking any precautions against a wall of flame that will turn the solid earth into incandescence. But in those last minutes it will at least be something to do, a definite plan to put into execution.

N Day.

08:00: The solar rotation has carried the large northern spot-group out of sight around the limb. The other spot has settled down to a stable beta-p group. Once again the face of the sun is normal.

I have just completed the routine program of solar observations that I have carried out continuously since 1906. First two direct photographs of the sun. Then a photograph in hydrogen light, a photograph in calcium, and a series on the prominence projecting around the limb. The plates have been developed and are fixing in the darkroom.

08:30: Observed a tornado prominence of moderate height at position angle 170°. Spiral structure well defined. Usual wisp of smoke issuing from top. No certain indication of radial motion or change in P. A.

13:17: The seeing has been dropping rapidly during the last hour, probably due to a wind that has sprung up from the west. The seeing was about 6 at noon but now is barely 2.

14:00: The image is blurred and lacking in detail. Sun has probably gone behind a veil of cirrus haze. Hope it doesn't get so thick I will have to close up.

16:12: The zero hour! And still the sun looks just as I have seen it thousands of times before—a cherry-red disk with a few dark prominences streaked across it.

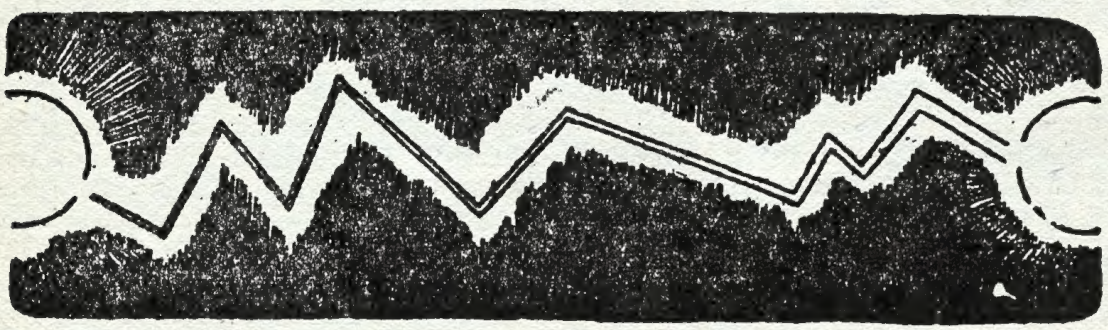
17:00: Five o'clock p.m. on the Pacific coast. The image is very bad. Can't focus within three inches. Tower shaking in rising wind. Nothing unusual to report.

17:28: The sun will be below the horizon very soon now. I wonder if Marley's form—

Here it comes! The sun is swelling up like a toy red balloon. But so slowly! I never supposed it would be so slow. Like a slow-motion picture of the sun blowing up.

I am glad. I was never so glad of anything before.

Writing these last lines I thought of Bixby and Smedley and all the rest. Trying to picture their faces made me laugh. I laughed long and loud till my sides ached, and the sound echoed back and forth between the empty walls of the sun tower.



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